

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 b1  
Edition : 04.11.88  
Replaces : 7.1.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 865  
  
Injection pump  
Pump designation : PE6P120A32ORS3202  
EP type number : 0 411 826 769  
Governor  
Governor design. : RQV300..102SPA657-23  
Governor no. : 0 421 813 669

Customer-spec. information  
Customer : VOLVO

Engine : TD122A 35

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.60...3.70  
                  : (3.55...3.75)

Rack travel in mm : 9.00...12.00

A01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 21.3...21.5

100 s : (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 2.1...2.6

100 s : (1.8...2.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.50...1.90

2nd speed rpm : 500  
travel mm : 4.20...4.80

3rd speed rpm : 800  
travel mm : 6.30...6.70

4th speed rpm : 1080  
travel mm : 8.30...8.50

5th speed rpm : 1150  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 300...390

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 480  
Rack travel in m: 11.90...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 193.0...195.0  
1000 s: (190.0...198.0)

#### BREAKAWAY

A02

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 21.0...26.0  
1000 s: (18.5...28.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 W  
Edition : 24.06.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 869  
  
Injection pump  
Pump designation : PE6P120A32ORS3118  
EP type number : 0 411 826 726  
Governor  
Governor design. : RQV250...1100PA649-1  
Governor no. : 0 421 813 675

## Customer-spec. information

Customer : VOLVO

Engine : THD 102 KD

1st version kW : 250.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
                  : (2.55...2.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del. quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 500  
travel mm : 4.10...4.90

3rd speed rpm : 700  
travel mm : 6.30...6.70

4th speed rpm : 950  
travel mm : 6.30...6.70

5th speed rpm : 1100  
travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 222.0...224.0  
1000 : (219.0...227.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 11.50  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.50...12.60

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm : 8.10...8.30  
2nd pressure hPa : 700  
Rack travel in mm : 12.30...12.40  
3rd pressure hPa : 120  
Rack travel in mm : 8.80...9.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (235.0...285.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del. quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension =  
2.40...2.60 mm.

Permissible alteration from 2.20...2.90  
mm

#### APPLICATION

Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 11,0 u  
 Edition : 01.07.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 872

Injection pump  
 Pump designation : PE6P120A32OLS3815-12  
 EP type number : 0 411 826 770  
 Governor  
 Governor design. : RQV300..1050PA880  
 Governor no. : 0 421 813 671

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 441 A

1st version kW : 191.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del. quantity cm<sup>3</sup>/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.4...2.2

100 s: (1.1...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 800

travel mm : 5.80...6.20

4th speed rpm : 1080

travel mm : 7.70...8.10

5th speed rpm : 1130

travel mm : 8.50...9.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h : 700  
Del. quantity : 190.0...192.0  
1000 : (187.0...195.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.90  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : 1.30  
2nd speed rpm : 1050  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 700  
Rack travel in m: 13.50...13.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 13.10...13.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 780  
Rack travel in m: 13.20...13.30

4th pressure hPa : 1100  
Rack travel in m: 13.45...13.55  
5th pressure hPa : -  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 184.0...187.0  
1000 s: (181.0...190.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm<sup>3</sup> : 8.00

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 c1  
Edition : 16.06.88  
Replaces : 26.2.88  
Test oil : ISO-4113

Combination no. : 0 401 846 879

Injection pump  
Pump designation : PE6P120A72ORS3192  
EP type number : 0 411 826 761  
Governor  
Governor design. : RGV300...900PAB57-1  
Governor no. : 0 421 813 683

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.101

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.40...3.50  
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 23.9...24.1

100 s : (23.6...24.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s : (1.5...2.7)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.70...0.90

2nd speed rpm : 550  
travel mm : 4.00...4.60

3rd speed rpm : 800  
travel mm : 6.60...6.90

4th speed rpm : 900  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 950

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h : 900

Del. quantity : 239.0...241.0

1000 : (236.0...244.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 12.20  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 4...12

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 370...490

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 520  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 330  
Rack travel in m: 9.80...10.20

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 233.0...239.0  
1000 s: (230.0...242.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 109.0...111.0  
1000 s: (106.0...114.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 235.0...265.0  
1000 s: (231.0...269.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (15.0...27.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s 9  
Edition : 24.06.88  
Replaces : 22.4.88  
Test oil : ISO-4113

Combination no. : 0 401 846 880

Injection pump  
Pump designation : PE6P110A320LS3835-1  
EP type number : 0 411 816 755  
Governor  
Governor design. : RQ300/1050PA187-19  
Governor no. : 0 421 801 428

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.2...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.6

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (122.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.1

Testing:

1st rack travel in: 12.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

**LOW IDLE 1**

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

**Testing:**

Speed rpm : 200  
Minimum rack trave: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20  
Rack travel in mm : 2.00  
Speed rpm : 400...440

**FUEL DELIVERY CHARACTERISTICS**

**1st version**

Speed rpm : 1050  
Del.quantity cm3/ : 138.0...142.0  
1000 s: (135.0...145.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

**BREAKAWAY**

**1st version**

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

**STARTING FUEL DELIVERY**

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

**APPLICATION**

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0q13  
Edition : 07.10.88  
Replaces : 29.4.88  
Test oil : ISQ-4113

Combination no. : 0 401 846 883

Injection pump  
Pump designation : PE6P110A32ORS3108-1  
EP type number : 0 411 816 757  
Governor  
Governor design. : RQV250...1100PA649  
Governor no. : 0 421 813 346

Customer-spec. information  
Customer : VOLVO

Engine : THD 102 KB

1st version kW : 212.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
                  : (2.5...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...425

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.90...14.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 10.20...10.40  
2nd pressure hPa : 240  
Rack travel in mm: 10.40...10.50  
3rd pressure hPa : 800  
Rack travel in mm: 13.30...13.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 111.5...114.5  
1000 s: (109.0...117.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 30.0...34.0  
1000 s: (27.5...36.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 10,5 e  
Edition : 05.08.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 884  
  
Injection pump  
Pump designation : PE6P130A320LS3210  
EP type number : 0 411 836 713  
Governor  
Governor design. : RGV400...750PA607  
Governor no. : 0 421 813 313

Customer-spec. information  
Customer : SSCM

Engine : UD 25.L6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
  
Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 13.10...13.20  
-----  
Del. quantity cm<sup>3</sup>/ : 38.8...39.1  
-----  
100 s : (38.4...39.4)  
-----  
Spread cm<sup>3</sup> : 0.6  
-----  
100 s : (1.0)  
-----  
2nd speed rpm : 400.0  
Rack travel in mm : 5.6...5.8  
Del. quantity cm<sup>3</sup>/ : 2.7...3.3  
100 s : (2.3...3.7)  
Spread cm<sup>3</sup> : 1.0  
100 s : (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
travel mm : 0.50...0.90  
2nd speed rpm : 500  
travel mm : 1.90...2.10  
3rd speed rpm : 600  
travel mm : 1.90...2.10  
4th speed rpm : 750  
travel mm : 4.30...5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 388.0...391.0  
1000 : (384.5...394.5)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

## RATED SPEED

1st version

Testing:  
1st rack travel in: 12.10  
Speed rpm : 750...755

2nd rack travel in: 4.00  
Speed rpm : 775...790  
4th rack travel in: 950  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 650...750

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 750...755

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (23.0...37.0)  
Speed cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

:

APPLICATION  
Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 10,0 f  
Edition : 19.05.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 885  
Injection pump  
Pump designation : PE6P110A72ORS3204  
EP type number : 0 411 816 754  
Governor  
Governor design. : RQ300/1100PA412-3  
Governor no. : 0 421 801 436

Customer-spec. information  
Customer : STEYR

Engine : MD615.63

1st version kW : 204.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet pres., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 2.0...2.5

100 s: (1.7...2.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 600  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 340  
Rack travel in m: 10.20...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.60  
Del.quantity cm<sup>3</sup>/ : 20.0...25.0  
1000 s: (17.5...27.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HZU 11,9 a  
Edition : 23.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 886  
Injection pump  
Pump designation : PE6P120A32ORS3213  
EP type number : 0 411 826 779  
Governor  
Governor design. : RQV250...1000PA891  
Governor no. : 0 421 813 704

Customer-spec. information  
Customer : HAEP

Engine : X6130 Z1

1st version kW : 206.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.00x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

A17

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 22.3...22.7

100 s : (22.0...23.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 2.5...3.1

100 s : (2.2...3.4)

Spread cm<sup>3</sup> : 0.6

100 s : (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.20...1.40

2nd speed rpm : 500  
travel mm : 3.40...3.80

3rd speed rpm : 750  
travel mm : 5.50...5.90

4th speed rpm : 1000  
travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 700

Del. quantity : 223.0...227.0

1000 : (220.0...230.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.70

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1115...1145

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100

Minimum rack travel: 8.20

Speed rpm : 250

Rack travel in mm : 6.60...6.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.50

2nd pressure hPa : 400

Rack travel in m: 11.10...11.20

3rd pressure hPa : 300

Rack travel in m: 9.90...10.10

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 123.0...127.0

1000 s: (120.0...130.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s12  
Edition : 19.05.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 887  
  
Injection pump  
Pump designation : PE6P110A32OLS3835-1  
EP type number : 0 411 816 755  
Governor  
Governor design. : RQ300/950PA187-22  
Governor no. : 0 421 801 440

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 12.8...13.0

100 s: (12.5...13.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del. quantity : 128.0...130.0

1000 : (125.5...132.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.0

Testing:

1st rack travel in: 11.50

Speed rpm : 995...1010

2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
2nd speed rpm : 600  
3rd speed rpm : 900

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 123.0...127.0  
1000 s: (120.0...130.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s13  
Edition : 04.11.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 888  
  
Injection pump  
Pump designation : PE6P110A320LS3835-1  
EP type number : 0 411 816 755  
Governor  
Governor design. : RQV300..950PA884-3  
Governor no. : 0 421 813 706

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 12.8...13.0

100 s: (12.5...13.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.6

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed rpm : 800

travel mm : 6.30...6.60

3rd speed rpm : 1000

travel mm : 8.30...8.70

4th speed rpm : 1060

travel mm : 9.20...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del. quantity : 128.0...130.0

1000 : (125.5...132.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

Remarks: :

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 11.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 200  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00

#### CONSTANT REGULATION

Speed rpm : 300...450

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 119.0...123.0  
1000 s: (116.0...126.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 v5  
Edition : 19.08.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 890  
Injection pump  
Pump designation : PE6P110A32ORS3080-3  
EP type number : 0 411 816 758  
Governor  
Governor design. : RQV250....950PA657-26  
Governor no. : 0 421 813 709

Customer-spec. information  
Customer : VOLVO

Engine : TD102FH

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder assembly : 0 681 343 009  
Opening pressure, bar : 172...175  
Test lines : 1 680 750 015  
Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
Prestroke mm : 3.00...3.10  
                  : (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 12.60...12.70  
Del. quantity cm<sup>3</sup>/ : 17.9...18.1  
100 s : (17.6...18.4)  
Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)  
2nd speed rpm : 250.0  
Rack travel in mm : 3.8...4.0  
Del. quantity cm<sup>3</sup>/ : 1.5...1.9  
100 s : (1.2...2.1)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 350  
travel mm : 2.20...2.80  
3rd speed rpm : 750  
travel mm : 6.30...6.70  
4th speed rpm : 985  
travel mm : 8.20...8.40  
5th speed rpm : 1060  
travel mm : 9.10...9.50

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 985  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h : 900  
Del. quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.60  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 4...12

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.80...4.00

## CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 9.90...10.10  
2nd pressure hPa : 125  
Rack travel in mm: 10.20...10.30  
3rd pressure hPa : 490  
Rack travel in mm: 12.20...12.40

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 129.5...132.5  
1000 s: (127.0...135.0)

## BREAKAWAY

1st version

A24

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 980...990

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.80...4.00  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.

Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 f  
Edition : 02.09.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 891  
  
Injection pump  
Pump designation : PE6P120A720RS3216  
EP type number : 0 411 826 781  
Governor  
Governor design. : RQV300...97SPA898K  
Governor no. : 0 421 815 197

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0  
Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s : (23.8...24.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 2.4...3.0

100 s : (2.1...3.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...2.00

2nd speed rpm : 400  
travel mm : 3.20...4.00

3rd speed rpm : 750  
travel mm : 6.70...7.10

4th speed rpm : 975  
travel mm : 9.60...9.80

5th speed rpm : 1200  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h : 1200

Del. quantity : 241.0...243.0  
1000 : (238.0...246.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 12.10  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.90  
Speed rpm : 300  
Rack travel in mm : 5.30...5.50

#### CONSTANT REGULATION

Speed rpm : 280...400

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 830  
Rack travel in m: 12.70...12.80  
3rd speed rpm : 600  
Rack travel in m: 11.80...12.10  
4th speed rpm : 350  
Rack travel in m: 11.50...11.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

#### Measurement

Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 700

Rack travel in m: 12.00...12.10  
3rd pressure hPa : 400  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 350  
Del. quantity cm<sup>3</sup>/ : 169.0...175.0  
1000 s: (166.0...178.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 111.0...113.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 24.0...30.0  
1000 s: (21.0...33.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 e  
Edition : 7.10.88  
Replaces : 12.12.86  
Test oil : ISO-4113

Combination no. : 0 401 848 708

Injection pump  
Pump designation : PE8P110A320LS3802  
EP type number : 0 411 818 705  
Governor  
Governor design. : RQ300/1150PA187-3  
Governor no. : 0 421 801 133

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206,0  
Rated speed : 2300  
2nd version kW : 206,0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 11.3...11.5

100 s: (11.0...11.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

1st speed rpm : 1150

Rack travel in mm : 12.3...12.4

Del. quantity cm<sup>3</sup>/ : 12.7...12.9\*

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.00...8.10

Del. quantity cm<sup>3</sup>/ : 1.5...2.1 \*

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 113.0...115.0  
1000 : (110.5...117.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)  
2nd version  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 127.0...129.0 \*  
1000 s : (124.0...132.0)  
Spread cm<sup>3</sup> : 4.0  
1000 s : (8.0)

#### RATED SPEED

##### 1st version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.5

##### Testing:

1st rack travel in: 10.70  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

##### 2nd version

Setting point:  
Speed rpm : 650 \*  
Rack travel in mm : 13.5

##### Testing:

1st rack travel in: 11.30  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 10.20  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 420...460  
Speed rpm : 550  
Maximum rack travel: 1.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

A28

Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 132.0...136.0  
1000 s : (129.0...139.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s : (8.00)

##### 2nd version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 118.0...122.0 \*  
1000 s : (115.0...125.0)  
Spread cm<sup>3</sup> : 8.0  
1000 s : (1.1)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1195...1210

##### 2nd version

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s : (126.0...154.0)

Remarks:

:

See VDT-I-401/102.

Version 1: Without return-flow  
restriction

Version 2: With return-flow restriction

\* Version 2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 e 4  
Edition : 16.05.88  
Replaces : 13.5.87  
Test oil : ISO-4113

Combination no. : 0 401 848 708

Injection pump  
Pump designation : PE8P110A32QLS3802-10  
EP type number : 0 411 818 710  
Governor  
Governor design. : RQ300/1150PA187-3  
Governor no. : 0 421 801 133

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 11.70...11.80  
-----  
Del. quantity cm<sup>3</sup>/ : 11.3...11.5  
-----  
100 s: (11.0...11.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.7)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 7.9...8.1  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 113.0...115.0  
1000 : (110.5...117.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.5

Testing:  
1st rack travel in: 10.70

Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 10.20

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 420...460

Speed rpm : 550

Maximum rack trave: 1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150

Del. quantity cm<sup>3</sup>/ : 132.0...136.0

1000 s: (129.0...139.0)

Spread cm<sup>3</sup> : 5.00

1000 s: (8.00)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 c 2  
Edition : 07.10.88  
Replaces : 5.85  
Test oil : ISO-4113

Combination no. : 0 401 848 712

Injection pump  
Pump designation : PE8P110A320LS3802-10  
EP type number : 0 411 818 710  
Governor  
Governor design. : RQV300...1150PAS24-2  
Governor no. : 0 421 813 264

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...0

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 11.70...11.80  
-----  
Del. quantity cm<sup>3</sup>/ : 11.4...11.6  
-----  
100 s: (11.1...11.8)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (-)

2nd speed rpm : 300.0  
Rack travel in mm : 7.9...8.1  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...1.80  
2nd speed rpm : 800  
travel mm : 5.80...6.20  
3rd speed rpm : 1200  
travel mm : 8.20...8.40  
4th speed rpm : 1260  
travel mm : 9.60...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1190  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 114.0...116.0  
1000 : (111.5...118.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (-)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 132.0...137.0  
1000 s: (129.0...140.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 m 4  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 848 740  
Injection pump  
Pump designation : PEBP110A32OLS3813-10  
EP type number : 0 411 818 712  
Governor  
Governor design. : RGV350...1150PA378-8  
Governor no. : 0 421 813 725

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 13.1...13.3

100 s: (12.8...13.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.50...1.70

2nd speed rpm : 500  
travel mm : 1.70...1.90

3rd speed rpm : 800  
travel mm : 4.60...4.90

4th speed rpm : 1200  
travel mm : 8.20...8.50

5th speed rpm : 1300  
travel mm : 10.00...10.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 131.0...133.0  
1000 : (128.5...135.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.70  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60

#### CONSTANT REGULATION

Speed rpm : 385...495

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 109.0...113.0  
1000 s: (106.0...116.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 84.0...87.0 \*  
1000 s: (81.0...90.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

\* = Set at reduced-delivery stop.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 14,6 o 1  
Edition : 05.08.88  
Replaces : 2.85  
Test oil : ISO-4113

Combination no. : 0 401 848 744

Injection pump  
Pump designation : PE8P120A320LS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RQV350...1150PA590-1  
Governor no. : 0 421 813 3621

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 243.0  
Rated speed : 2300

### TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

### BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 1150

---

Rack travel in mm : 11.00...11.10

---

Del. quantity cm<sup>3</sup>/ : 15.8...16.0

---

100 s: (15.5...16.3)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 350.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 700  
Del. quantity : 158.0...160.0  
1000 : (155.0...163.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 370...480

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 850  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 750  
Rack travel in m: 11.30...11.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.50...11.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 470  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 400  
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 166.0...172.0  
1000 s: (163.0...175.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 140.0...142.0  
1000 s: (137.0...145.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 21,2 a  
Edition : 05.07.88  
Replaces : 4.85  
Test oil : ISO-4113  
Combination no. : 0 401 848 750  
Injection pump  
Pump designation : PE8P130A520/4RS3085  
EP type number : 0 411 838 705  
Governor  
Governor design. : RQV400...7SOPA618-1  
Governor no. : 0 421 813 330

Customer-spec. information  
Customer : BAUDOUIN

Engine : 8P15

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 074  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 3,20...3,30  
: (3,15...3,35)  
Rack travel in mm : 9,00...12,00

B09

Firing order : 1- 2- 4- 5- 6- 3-  
7- 8

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 8.50...8.60  
Del. quantity cm<sup>3</sup>/ : 19.1...19.5  
100 s: (19.1...19.5)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 3.9...4.1  
Del. quantity cm<sup>3</sup>/ : 2.3...2.9  
100 s: (2.3...2.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
travel mm : 0.90...1.10  
2nd speed rpm : 475  
travel mm : 1.80...2.30  
3rd speed rpm : 600  
travel mm : 1.80...2.30  
4th speed rpm : 750  
travel mm : 4.70...5.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 191.0...195.0  
1000 : (191.0...195.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 7.50  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...785  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:

Speed rpm : 100  
Minimum rack travel: 5.60  
Speed rpm : 400  
Rack travel in mm : 3.90...4.10

START CUT-OUT

Speed 1/min : 320 (340)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.50  
Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 d  
Edition : 25.03.88  
Replaces : 26.2.88  
Test oil : ISO-4113

Combination no. : 0 401 848 757

Injection pump  
Pump designation : PE8P120A920/SLS3827  
EP type number : 0 411 828 712  
Governor  
Governor design. : RQV300...900PA475-1  
Governor no. : 0 421 813 420

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8280.22.201

1st version kW : 309.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 3- 6- 5-  
                  7- 2

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
-----  
Rack travel in mm : 12.60...12.70  
-----  
Del. quantity cm<sup>3</sup>/ : 21.2...21.4  
-----  
100 s : (20.9...21.7)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s : (1.4...2.6)  
Spread cm<sup>3</sup> : 0.6  
100 s : (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.40...1.80  
2nd speed rpm : 450  
travel mm : 3.60...4.00  
3rd speed rpm : 750  
travel mm : 6.10...6.50  
4th speed rpm : 900  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 960  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 900

Del. quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 310...415

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.30  
2nd pressure hPa : 440  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 340  
Rack travel in m: 9.60...10.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 227.0...235.0  
1000 s: (224.0...238.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 14,6 k 8  
Edition : 24.06.88  
Replaces : 30.3.87  
Test oil : ISO-4113

Combination no. : 0 401 848 762

Injection pump  
Pump designation : PEBP120A320LS3807-10  
EP type number : 0 411 828 713  
Governor  
Governor design. : RGV300...1150PAS45-7  
Governor no. : 0 421 813 595

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0  
Rated speed : 2300

### TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 10.70...10.80  
-----  
Del. quantity cm<sup>3</sup>/ : 15.9...16.1  
-----  
100 s: (15.6...16.4)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...1.80  
2nd speed rpm : 800  
travel mm : 6.00...6.20  
3rd speed rpm : 1200  
travel mm : 8.00...8.20  
4th speed rpm : 1300  
travel mm : 9.00...9.50

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1190  
Rack travel in mm : 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 700  
Del. quantity : 159.0...161.0  
1000 : (156.0...164.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 700  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 500

Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup> : 173.5...175.5  
1000 s: (170.5...178.5)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup> : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup> : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 c 7  
Edition : 24.06.88  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 401 848 781

Injection pump  
Pump designation : PE8P110A320LS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQ300/950PA827-6K  
Governor no. : 0 421 803 098

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 206.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950  
-----  
Rack travel in mm : 13.60...13.70  
-----  
Del. quantity cm<sup>3</sup>/ : 13.4...13.6  
-----  
100 s: (13.1...13.8)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 8.8...9.0  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.90...2.20  
2nd speed rpm : 500  
travel mm : 5.50...5.60  
3rd speed rpm : 775  
travel mm : 6.20...6.40  
4th speed rpm : 950  
travel mm : 7.30...7.70  
5th speed rpm : 1020  
travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 14.70...15.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950

Del. quantity : 134.0...136.0  
1000 : (131.5...138.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 15.2

Testing:

1st rack travel in: 12.50  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.9

Testing:

Speed rpm : 200  
Minimum rack travel: 11.50  
Speed rpm : 300  
Rack travel in mm : 8.80...9.00  
Rack travel in mm : 3.00  
Speed rpm : 480...530  
Speed rpm : 600  
Maximum rack travel: 1.80

TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 500  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 750  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 115.0...118.0  
1000 s: (112.0...121.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (11.0)  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (119.0...129.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (11.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 b  
Edition : 14.10.88  
Replaces : 2.12.86  
Test oil : ISO-4113

Combination no. : 0 401 848 785

Injection pump  
Pump designation : PE8P120A520/4LS3834  
EP type number : 0 411 828 718  
Governor  
Governor design. : RQV250...1150PA668-7  
Governor no. : 0 421 813 481

## Customer-spec. information

Customer : MAN

Engine : D 2848 LE

1st version kW : 375.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
                  : (4.15...4.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250

Rack travel in mm : 6.60...6.80

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.20

2nd speed rpm : 800  
travel mm : 6.30...6.50

3rd speed rpm : 1150  
travel mm : 8.40...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.0

1000 : (9.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

### Testing:

1st rack travel in: 10.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 400...460

## START CUT-OUT

Speed 1/min : 200 (220)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...6.80  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.0  
1000 s: (12.0)

Remarks:  
: MAN-NR. 2-7846

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 c 3  
Edition : 09.09.88  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 401 848 790

Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQ300/1050PA187-17  
Governor no. : 0 421 801 410

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 192.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.20...14.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 117.0...119.0

1000 : (114.5...121.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.7

Testing:

1st rack travel in: 10.50

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 97.0...100.0  
1000 s: (94.0...103.0)  
Spread cm3 : 8.00  
1000 s: (11.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 c 5  
Edition : 05.08.88  
Replaces : 18.10.87  
Test oil : ISO-4113

Combination no. : 0 401 848 794

Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQ300/1050PA187-18  
Governor no. : 0 421 801 430

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.70...12.80  
-----  
Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
-----  
100 s: (12.3...13.0)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.7)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 8.2...8.5  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 650  
Rack travel in mm : 14.0

Testing:  
1st rack travel in: 11.70

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050  
Del.quantity cm3/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 6  
Edition : 01.07.88  
Replaces : 11.3.88  
Test oil : ISO-4113

Combination no. : 0 401 848 795

Injection pump  
Pump designation : PE8P110A320LS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQV300..10SOPA884-1  
Governor no. : 0 421 813 686

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.8

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 800

travel mm : 7.80...8.20

3rd speed rpm : 1100

travel mm : 8.20...8.60

4th speed rpm : 1150

travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

Remarks: :

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed rpm : 300...400

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

**BOSCH INJ. PUMP TEST SPECIFICATIONS****Note remarks**

Test sheet : MB 14,6 m 3  
 Edition : 27.10.88  
 Replaces : 12.2.88  
 Test oil : ISO-4113

Combination no. : 0 401 848 797

Injection pump  
 Pump designation : PE8P110A320LS3813-10  
 EP type number : 0 411 818 712  
 Governor  
 Governor design. : RQV350...1150PA378-8  
 Governor no. : 0 421 813 725

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206,0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (11.1...11.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.7

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.90...2.10

2nd speed rpm : 500  
 travel mm : 3.20...3.50

3rd speed rpm : 800  
 travel mm : 4.50...4.80

4th speed rpm : 1200  
 travel mm : 8.00...8.50

5th speed rpm : 1275  
 travel mm : 9.30...9.90

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 750

Del. quantity : 114.0...116.0  
1000 : (111.5...118.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...24

#### Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.40...7.70

#### CONSTANT REGULATION

Speed rpm : 350...700

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 132.0...137.0  
1000 s: (129.0...140.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 84.0...87.0 \*  
1000 s: (81.0...90.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 c  
Edition : 11.07.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 848 799  
Injection pump  
Pump designation : PE8P120A520/4LS3847  
EP type number : 0 411 828 722  
Governor  
Governor design. : RQ750PA663-8  
Governor no. : 0 421 801 448

Customer-spec. information  
Customer : MAN

Engine : D 2848 LE

1st version kW : 265.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 4.20...4.30  
                  : (4.15...4.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 24.6...24.8

100 s : (24.3...25.1)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 246.0...248.0

1000 : (243.0...251.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 13.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 782...795

4th rack travel in: 900

Speed rpm : 0.00...1.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 200.0...220.0

1000 s : (196.0...224.0)

Remarks:

:

APPLICATION  
Generator set



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 7  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 848 800  
Injection pump  
Pump designation : PE8P110A320LS3842-1  
EP type number : 0 411 818 716  
Governor  
Governor design. : RQV350..1050PA378-7  
Governor no. : 0 421 813 714

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.70...12.80  
-----  
Del. quantity cm<sup>3</sup>/ : 12.4...12.6  
-----  
100 s: (12.1...12.8)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.7)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 8.0...8.3  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.50...1.70  
2nd speed rpm : 800  
travel mm : 4.90...5.30  
3rd speed rpm : 1100  
travel mm : 7.90...8.50  
4th speed rpm : 1150  
travel mm : 8.90...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1110  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 124.0...126.0  
1000 : (121.5...128.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 250  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.30

#### CONSTANT REGULATION

Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (134.0...144.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.0...92.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

CO2

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 n  
Edition : 26.08.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 848 801  
Injection pump  
Pump designation : PEBP110A320LS3848  
EP type number : 0 411 818 718  
Governor  
Governor design. : RQV300...950PA884-4  
Governor no. : 0 421 813 716

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 206.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950  
-----  
Rack travel in mm : 13.50...13.60  
-----  
Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
-----  
100 s: (13.0...13.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 8.8...9.0  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.30  
2nd speed rpm : 500  
travel mm : 3.30...3.60  
3rd speed rpm : 800  
travel mm : 6.30...6.60  
4th speed rpm : 1000  
travel mm : 8.30...8.70  
5th speed rpm : 1075  
travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 980  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950

Del. quantity : 133.0...135.0  
1000 : (130.5...137.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 12.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack trave: 10.50  
Speed rpm : 300  
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION  
Speed rpm : 300...450

#### START CUT-OUT

Speed 1/min : 220 (240)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 c  
Edition : 02.09.88  
Replaces : 20.6.88  
Test oil : ISO-4113

Combination no. : 0 401 849 705

Injection pump  
Pump designation : PE10P110A320LS3818  
EP type number : 0 411 819 702  
Governor  
Governor design. : RQ300/1150PA437-2  
Governor no. : 0 421 801 171

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423

1st version kW : 261.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...140

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 11.20...11.30  
-----  
Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
-----  
100 s: (12.3...13.0)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 7.9...8.1  
Del. quantity cm<sup>3</sup>/ : 1.2...2.0  
100 s: (0.9...2.2)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 13.5

Testing:  
1st rack travel in: 10.20

Speed rpm : 1190...1205  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

Remarks:  
:

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 600  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 900  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 109.0...113.0  
1000 s: (106.0...116.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 118.0...123.0  
1000 s: (115.0...126.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1190...1205

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : KHD 15,8 q  
 Edition : 16.05.88  
 Replaces : 13.5.87  
 Test oil : ISO-4113

Combination no. : 0 401 849 728

Injection pump  
 Pump designation : PE10P110A920/SLS3138  
 EP type number : 0 411 819 707  
 Governor  
 Governor design. : RQV425....900PA814  
 Governor no. : 0 421 813 558

Customer-spec. information  
 Customer : KHD

Engine : F10L513 OPT.

1st version kW : 188.0  
 Rated speed : 1800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 9.4...9.6

100 s: (9.1...9.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 425.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 425  
 travel mm : 1.30...1.70

2nd speed rpm : 450  
 travel mm : 2.10...2.70

3rd speed rpm : 550  
 travel mm : 3.40...4.00

4th speed rpm : 950  
 travel mm : 8.40...8.60

5th speed rpm : 1000  
 travel mm : 9.20...9.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 950

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 900

Del. quantity : 94.0...96.0

1000 : (91.0...99.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 980...1010  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 22...30

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.80  
Speed rpm : 425  
Rack travel in mm : 7.30...7.50

#### CONSTANT REGULATION

Speed rpm : 435...490

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 550  
Rack travel in m: 10.70...10.80  
3rd speed rpm : 675  
Rack travel in m: 10.70...10.80  
4th speed rpm : 750  
Rack travel in m: 10.60...10.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 675  
Del. quantity cm<sup>3</sup>/ : 96.0...100.0  
1000 s: (94.0...102.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

COB

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Compressor



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 e 4  
Edition : 07.10.88  
Replaces : 16.6.87  
Test oil : IS0-4113

Combination no. : 0 401 849 733

Injection pump  
Pump designation : PE10P120A320LS3824  
-10  
EP type number : 0 411 829 701  
Governor  
Governor design. : RQ300/1150PAS46-11  
Governor no. : 0 421 801 384

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423 A

1st version kW : 301.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7-  
6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 11.00...11.10  
-----  
Del. quantity cm<sup>3</sup>/ : 15.2...15.4  
-----  
100 s: (14.9...15.7)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 700  
Del. quantity : 152.0...154.0  
1000 : (149.0...157.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (8.00)

## RATED SPEED

1st version  
Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.60...11.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.40...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 360  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 420  
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750

Del.quantity cm3/ : 169.0...172.0  
1000 s: (166.0...175.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 o  
Edition : 02.09.88  
Replaces : 5.2.88  
Test oil : ISO-4113

Combination no. : 0 401 849 742

Injection pump  
Pump designation : PE10P110A32OLS3844  
EP type number : 0 411 819 710  
Governor  
Governor design. : RQV300..1050PA884-2  
Governor no. : 0 421 813 688

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 443

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7-  
                  6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.50...12.60  
-----  
Del. quantity cm<sup>3</sup>/ : 12.3...12.5  
-----  
100 s: (12.0...12.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.3  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.40  
2nd speed rpm : 650  
travel mm : 5.00...5.40  
3rd speed rpm : 1100  
travel mm : 8.20...8.60  
4th speed rpm : 1160  
travel mm : 9.20...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1080  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 123.0...125.0  
1000 : (120.5...127.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

Remarks: :

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.10

CONSTANT REGULATION  
Speed rpm : 300...420

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (131.0...141.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

**BOSCH INJ. PUMP TEST SPECIFICATIONS****Note remarks**

Test sheet : DAF 11,6o10  
 Edition : 24.10.88  
 Replaces : 9.3.87  
 Test oil : ISO-4113

Combination no. : 0 401 876 293

Injection pump  
 Pump designation : PE6P120A32ORS415-12  
 EP type number : 0 411 826 136  
 Governor  
 Governor design. : RSV250...900PSA508  
 Governor no. : 0 421 833 193

Customer-spec. information  
 Customer : DAF

Engine : DKX 1160E

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 17.4...17.6  
 100 s : (17.1...17.9)

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

**FULL LOAD DELIV. AT FULL LOAD STGP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h : 700  
 Del. quantity : 174.0...176.0  
 1000 : (171.0...179.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 10.00  
 Speed rpm : 935...945  
 2nd rack travel in: 4.00  
 Speed rpm : 1010...1040  
 3rd rack travel in: 4.00

Speed rpm : 1020...1050  
4th rack travel in: 1180  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 395...455

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 600  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 725  
Rack travel in m: 11.50...11.70  
4th speed rpm : 775  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 300  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 255  
Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 875  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (167.0...177.0)  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 140.0...142.0  
1000 s: (137.0...145.0)

#### BREAKAWAY

C14

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 935...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 c 1  
Edition : 04.11.88  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 401 876 322

Injection pump  
Pump designation : PE6P110A32ORS497  
EP type number : 0 411 816 165  
Governor  
Governor design. : RSV200...1200P1A374-  
2  
Governor no. : 0 421 833 205

Customer-spec. information  
Customer : VOLVO

Engine : TJD71A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 11.6...11.8  
100 s : (11.3...12.1)

Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)

2nd speed rpm : 200.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s : (-)

Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 900

Del. quantity : 116.0...118.0  
1000 : (113.0...121.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:

1st rack travel in : 10.70  
Speed rpm : 1240...1250

2nd rack travel in : 4.00  
Speed rpm : 1290...1320

4th rack travel in : 1420  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 4.8  
Speed rpm : 200  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 280...340

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 800  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 270  
Rack travel in m: 9.10...9.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (63.0...71.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...215.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.20...5.40

Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f1  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 332A

Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 A1 COMR 400

1st version kW : 125.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

C17

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 11.0...11.2

100 s : (10.8...11.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 10.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1120...1150

3rd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1280  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 450  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 250  
Rack travel in m: 12.70...13.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g  
Edition : 16.06.88  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 401 876 333

Injection pump  
Pump designation : PE6P120A32ORS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

Customer-spec. information  
Customer : ENASA

Engine : 96 T1A0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 21.3...21.5

100 s : (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1180...1210

3rd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 450  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 250  
Rack travel in m: 12.40...13.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f  
Edition : 16.06.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 335  
Injection pump  
Pump designation : PE6P120A32ORS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1100PSA508  
-8  
Governor no. : 0 421 833 298

Customer-spec. information  
Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 067  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650  
Rack travel in mm : 11.10...11.20  
Del. quantity cm<sup>3</sup>/ : 17.1...17.3  
100 s : (16.8...17.6)  
Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 6.7...6.9  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s : (1.1...2.3)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h : 700  
Del. quantity : 171.0...173.0  
1000 : (168.0...176.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 45...53

Testing:  
1st rack travel in: 9.10  
Speed rpm : 1135...1145  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205

3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 1090  
Rack travel in m: 10.10...10.30  
3rd speed rpm : 800  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.40...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 158.0...162.0  
1000 s: (155.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 320.0...360.0  
1000 s: (316.0...364.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS****Note remarks**

Test sheet : DAF 11,7 g  
 Edition : 30.09.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 336

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1050PSA539  
 Governor no. : 0 421 833 299

Customer-spec. information  
 Customer : DAF

Engine : KT 191

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 650

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 16.1...16.3

100 s : (15.8...16.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 650

Aneroid pressure h : 700

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 9.20

Speed rpm : 1085...1095

2nd rack travel in: 4.00

Speed rpm : 1125...1155

3rd rack travel in: 4.00

Speed rpm : 1150...1180  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 10.20...10.40  
2nd speed rpm : 650  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 805  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.50...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 310  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : ?  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1040  
Del. quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 320.0...360.0  
1000 s: (316.0...364.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,0 r7  
Edition : 01.09.88  
Replaces : 24.7.87  
Test oil : ISO-4113

Combination no. : 0 401 876 734

Injection pump  
Pump designation : PE6P110A72ORS3040-1  
EP type number : 0 411 816 738  
Governor  
Governor design. : RSV350...1100P1/S05  
Governor no. : 0 421 833 148

Customer-spec. information  
Customer : SCANIA

Engine : DS 11 05

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
                  : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-20-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 15.6...15.8

100 s: (15.4...16.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (-)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 156.0...158.0

1000 : (154.0...160.0)

Spread cm<sup>3</sup> : 6.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 12.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1370

Speed rpm : 0.30...1.70

### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.0  
Speed rpm : 350  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 440...500

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 156.5...161.5  
1000 s: (154.0...164.0)

Scania test specifications taken over  
on 1983-10-05  
Start of delivery - engine: 20° before  
TDC  
Firing sequence of engine:  
1-5-3-6-2-4.

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1140...1150

### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
Rack travel in mm : 20.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.40...4.60  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 2.00  
1000 s: (4.00)

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

### ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q 4  
Edition : 05.08.88  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 401 876 740

Injection pump  
Pump designation : PE6P120A32OLS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-  
4

Governer no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.6

Del. quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 10.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 975  
Rack travel in m: 11.40...11.60  
3rd speed rpm : 600  
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,0 h  
Edition : 29.04.88  
Replaces : 5.6.87  
Test oil : ISO-4113  
Combination no. : 0 401 876 755  
Injection pump  
Pump designation : PE6P120A32ORS3187  
EP type number : 0 411 826 757  
Governor  
Governor design. : RSV250..1100P1A523  
Governor no. : 0 421 833 272

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TD121G

1st version kW : 256.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.40...2.50  
                  : (2.35...2.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 2.4...2.9

100 s: (2.2...3.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 211.5...213.5

1000 : (208.5...216.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 11.50  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1330  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 295...355

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 750  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 550  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 175.5...177.5  
1000 s: (172.5...180.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

D02

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 400.0...430.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 24.5...29.5  
1000 s: (22.0...32.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 11,0 k 5  
 Edition : 08.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 765

Injection pump  
 Pump designation : PE6P110A32OLS3814-10  
 EP type number : 0 411 816 741  
 Governor  
 Governor design. : RSV350...1150POA827  
 Governor no. : 0 421 833 297

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 159.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1130

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.7...7.9

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1130

Del. quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

**RATED SPEED**

1st version

Control lever

position degrees: 47...53

Testing:

1st rack travel in: 11.10

Speed rpm : 1165...1175

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.8

Speed rpm : 350

Rack travel in mm : 7.70...7.90

Rack travel in mm : 2.00

Speed rpm : 430...490

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

: LIEBHERR



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 e11  
Edition : 05.08.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 766  
Injection pump  
Pump designation : PE6P120A32QLS3810-10  
EP type number : 0 411 826 734  
Governor  
Governor design. : RSV350...1150POA827-  
1  
Governor no. : 0 421 833 301  
Customer-spec. information  
Customer : DAIMLER-BENZ  
Engine : OM421A  
1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Overflow  
quantity min. 1/h: 100...120  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 067  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1  
Phasing : 0-45-120-165-240-285  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1130  
Rack travel in mm : 10.70...10.80  
Del. quantity cm<sup>3</sup>/ : 15.8...16.0  
100 s: (15.5...16.3)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)  
2nd speed rpm : 350.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1130  
Del. quantity : 158.0...160.0  
1000 : (155.0...163.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1175...1185  
2nd rack travel in: 4.00  
Speed rpm : 1250...1270  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1175...1185

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:  
: LIEBHERR

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 14,6 p 1  
 Edition : 05.08.88  
 Replaces : 11.12.87  
 Test oil : ISO-4113

Combination no. : 0 401 878 703

Injection pump  
 Pump designation : PE8P120A32OLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823  
 Governor no. : 0 421 833 166

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1180  
 -----  
 Rack travel in mm : 9.00...9.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
 -----  
 100 s: (13.0...13.8)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 650.0  
 Rack travel in mm : 3.4...3.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1180  
 Del. quantity : 133.0...135.0  
 1000 : (130.0...138.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 8.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.6  
Speed rpm : 650  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 655...695

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 975  
Rack travel in m: 9.80...10.00  
3rd speed rpm : 1075  
Rack travel in m: 9.30...9.50  
4th speed rpm : 700  
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s: (142.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.  
Test specifications for version 1 apply  
to injection-pump assemblies on engines  
as of engine no. 422.901-410117069.

APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 t 1  
Edition : 16.06.88  
Replaces : 12.9.86  
Test oil : ISO-4113  
Combination no. : 0 401 878 706  
Injection pump  
Pump designation : PE8P110A32QLS3813-10  
EP type number : 0 411 818 712  
Governor  
Governor design. : RSV350...750POA824-2  
Governor no. : 0 421 833 228

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 173.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 13.10...13.20  
-----  
Del. quantity cm<sup>3</sup>/ : 14.2...14.4  
-----  
100 s: (13.9...14.6)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 7.2...7.5  
Del. quantity cm<sup>3</sup>/ : 1.4...1.8  
100 s: (1.1...2.0)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 142.0...144.0  
1000 : (139.5...146.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Testing:

1st rack travel in: 12.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.35

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 7.20...7.50

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1175...1185

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Observe VDT-I-420/120

0

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,6 p 5  
 Edition : 01.07.88  
 Replaces : 19.5.88  
 Test oil : ISO-4113

Combination no. : 0 401 878 711

Injection pump  
 Pump designation : PE8P120A32OLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823-  
 S  
 Governor no. : 0 421 833 280

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1180  
 -----  
 Rack travel in mm : 9.30...9.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
 -----  
 100 s: (13.0...13.8)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 650.0  
 Rack travel in mm : 3.3...3.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1180  
 Del. quantity : 133.0...135.0  
 1000 : (130.0...138.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 42...50

Testing:

1st rack travel in: 8.30  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 950  
Rack travel in m: 10.80...11.10  
3rd speed rpm : 1050  
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 650

D12

Rack travel in mm : 3.30...3.60  
Del. quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

APPLICATION

Forage harvester



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 j  
Edition : 07.10.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 879 701

Injection pump  
Pump designation : PE10P120A320LS3831  
EP type number : 0 411 829 705  
Governor  
Governor design. : RSV350...750POA824-8  
Governor no. : 0 421 833 234

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423 A

1st version kW : 249.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 11.30...11.40  
-----  
Del. quantity cm<sup>3</sup>/ : 17.3...17.5  
-----  
100 s: (17.0...17.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 4.8...5.0  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Governor spring pre-tension  
Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 173.0...175.0  
1000 : (170.0...178.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Testing:  
1st rack travel in: 10.30

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.50

LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

Observe VDT-I-420/120  
APPLICATION  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 a  
Edition : 05.08.88  
Replaces : 7.1.88  
Test oil : ISO-4113

Combination no. : 0 402 035 020

Injection pump  
Pump designation : PESSP120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQ300/1100PAB13-1  
Governor no. : 0 421 801 405

Customer-spec. information  
Customer : MAN

Engine : D286SLF

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 920  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.90...8.10  
2nd pressure hPa : 125  
Rack travel in m: 8.30...8.40  
3rd pressure hPa : 430  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 198.0...202.0  
1000 s: (195.0...205.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 200.0...206.0  
1000 s: (197.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7881

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 b  
Edition : 05.08.88  
Replaces : 7.1.88  
Test oil : ISO-4113

Combination no. : 0 402 035 021

Injection pump  
Pump designation : PES5P120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQV300...1100PA876  
Governor no. : 0 421 813 661

Customer-spec. information  
Customer : MAN

Engine : D286SLF

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.70...2.00

2nd speed rpm : 850  
travel mm : 6.00...6.20

3rd speed rpm : 1100  
travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed rpm : 100

Minimum rack travel: 5.50

Speed rpm : 300

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 10.70...10.80

2nd speed rpm : 1100

Rack travel in m: 10.20...10.30

3rd speed rpm : 900

Rack travel in m: 10.60...10.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 7.90...8.10

2nd pressure hPa : 125

Rack travel in m: 8.30...8.40

3rd pressure hPa : 430

Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100

Del.quantity cm<sup>3</sup>/ : 199.0...201.0

1000 s: (196.0...204.0)

Aneroid pressure h: 1000

Speed rpm : 650

Del.quantity cm<sup>3</sup>/ : 200.0...206.0

1000 s: (197.0...209.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 125.0...127.0

1000 s: (122.0...130.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 190.0...210.0

1000 s: (186.0...214.0)

## LOW IDLE

Speed rpm : 300

Rack travel in mm : 3.90...4.10

Del.quantity cm<sup>3</sup>/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7882

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a10
Edition : 30.09.88
Replaces : 10.85
Test oil : ISO-4113
Combination no. : 0 402 036 046
Injection pump
Pump designation : PES6P120A720/3LS470-3
EP type number : 0 412 026 051
Governor
Governor design. : RQ300...1100PA679-1
Governor no. : 0 421 801 333

Customer-spec. information
Customer : MAN

Engine : D2866LUL

1st version kW : 243.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del. quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension e mm : -  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1100  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 210  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 480  
Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 210.0...214.0  
1000 s: (207.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 122.0...124.0  
1000 s: (119.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7587



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 11,9 a9  
 Edition : 05.08.88  
 Replaces : 18.8.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 047  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 3  
 EP type number : 0 412 026 051  
 Governor  
 Governor design. : RQ250/1100PA679  
 Governor no. : 0 421 801 228

Customer-spec. information  
 Customer : MAN

Engine : D2866KUL

1st version kW : 265.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 750  
 -----  
 Rack travel in mm : 12.60...12.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 22.7...22.9  
 -----  
 100 s: (22.4...23.2)

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 227.0...229.0  
 1000 : (224.0...232.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 1100  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 965  
Rack travel in m: 13.00...13.20  
4th speed rpm : 1010  
Rack travel in m: 12.70...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 250  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 700  
Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

D22

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (205.0...225.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7717

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a11  
Edition : 05.08.88  
Replaces : 11.3.88  
Test oil : ISO-4113

Combination no. : 0 402 036 048

Injection pump  
Pump designation : PES6P120A720/3LS470-  
3  
EP type number : 0 412 026 051  
Governor  
Governor design. : RQV250...1100PA707  
Governor no. : 0 421 813 440

Customer-spec. information  
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.60...12.70  
-----  
Del. quantity cm<sup>3</sup>/ : 22.7...22.9  
-----  
100 s: (22.4...23.2)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----  
2nd speed rpm : 250.0  
Rack travel in mm : 5.4...5.6  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30  
2nd speed rpm : 450  
travel mm : 3.00...3.40  
3rd speed rpm : 850  
travel mm : 5.10...5.50  
4th speed rpm : 1100  
travel mm : 7.20...7.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000

Del. quantity : 227.0...229.0  
1000 : (224.0...232.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 285...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 1010  
Rack travel in m: 12.40...12.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 250  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 700

D24

Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (205.0...225.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a36  
Edition : 19.08.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 048  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
3  
EP type number : 0 412 026 051  
Governor  
Governor design. : RQV300...1100PA707  
Governor no. : 0 421 813 440

Customer-spec. information  
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...1.90

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.60...6.00

4th speed rpm : 1100

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 227.0...229.0  
1000 : (224.0...232.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION  
Speed rpm : 290...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 1010  
Rack travel in m: 12.40...12.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 250  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 700

Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (205.0...225.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7718

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a25  
Edition : 12.08.88  
Replaces : 22.5.87  
Test oil : ISO-4113

Combination no. : 0 402 036 050

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300...1100PA684-3  
Governor no. : 0 421 801 356

Customer-spec. information  
Customer : MAN

Engine : D2866KF/KH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

D27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 345...405

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.50...12.70  
2nd speed rpm : 1100  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 935  
Rack travel in m: 12.00...12.30  
4th speed rpm : 990  
Rack travel in m: 11.60...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.50  
2nd pressure hPa : 120  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 400  
Rack travel in m: 11.00...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

D28

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: 400  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...200.0  
1000 s: (185.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm: 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7598



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 11,9a12  
 Edition : 23.09.88  
 Replaces : 10.85  
 Test oil : IS0-4113

Combination no. : 0 402 036 053

Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 3  
 EP type number : 0 412 026 051  
 Governor  
 Governor design. : RQV300...1100PA707-1  
 Governor no. : 0 421 813 516

Customer-spec. information  
 Customer : MAN

Engine : D2866LUL

1st version kW : 243.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

E01

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.70...2.00

2nd speed rpm : 450  
 travel mm : 2.90...3.50

3rd speed rpm : 850  
 travel mm : 5.60...6.00

4th speed rpm : 1100  
 travel mm : 8.70...8.90

5th speed rpm : 1450  
 travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 750

Aneroid pressure h: 1000  
Del. quantity : 200.0...202.0  
1000 : (197.0...205.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.20...11.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 210  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 480  
Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 122.0...124.0  
1000 s: (119.0...127.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7738

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a19  
Edition : 07.12.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 402 036 058

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA684-1  
Governor no. : 0 421 801 344

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

E03

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 11.10...11.20  
-----  
Del. quantity cm<sup>3</sup>/ : 20.2...20.4  
-----  
100 s : (19.9...20.7)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s : (0.9...2.1)  
Spread cm<sup>3</sup> : 9.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h : 1000  
Del. quantity : 202.0...204.0  
1000 : (199.0...207.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in : 9.50

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.90...12.20  
2nd speed rpm : 1100  
Rack travel in m: 10.60...10.80  
3rd speed rpm : 875  
Rack travel in m: 11.80...12.00  
4th speed rpm : 950  
Rack travel in m: 11.20...11.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

E04

Speed rpm : 1100  
Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7756

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 11,9a24  
 Edition : 05.08.88  
 Replaces : 11.3.88  
 Test oil : ISO-4113

Combination no. : 0 402 036 062

Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2

EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA813  
 Governor no. : 0 421 801 358

**Customer-spec. information**  
 Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32

E05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 750

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 20.2...20.4  
 100 s: (19.9...20.7)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.7...4.9  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: 45

Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 202.0...204.0  
 1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70.. 10.80  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.20  
3rd speed rpm : 900  
Rack travel in m: 11.70...11.90  
4th speed rpm : 975  
Rack travel in m: 11.00...11.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.80

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

E06

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7823

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a29  
Edition : 21.10.88  
Replaces : 6.11.87  
Test oil : ISO-4113

Combination no. : 0 402 036 070

Injection pump  
Pump designation : PES6P120A720/3LS470-  
3

EP type number : 0 412 026 051  
Governor  
Governor design. : RQV300...1100PA707-2  
Governor no. : 0 421 813 638

Customer-spec. information  
Customer : MAN

Engine : D2866LUL/290

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

E07

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.60...10.70

Del. quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...1.80

2nd speed rpm : 475  
travel mm : 3.10...3.50

3rd speed rpm : 850  
travel mm : 5.50...5.90

4th speed rpm : 1100  
travel mm : 7.40...7.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 183.0...185.0  
1000 : (180.0...188.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 9.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 310...410

Aneroid/Altitude  
Compensator Test

#### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...8.90  
2nd pressure hPa : 210  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 375  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

EOB

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 192.0...198.0  
1000 s: (189.0...201.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 172.0...178.0  
1000 s: (169.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7879



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 g8  
Edition : 05.08.88  
Replaces : 22.1.88  
Test oil : ISO-4113

Combination no. : 0 402 036 072

Injection pump  
Pump designation : PES6P110A720/3LS477-  
2  
EP type number : 0 412 016 071  
Governor  
Governor design. : RQ250/1100PA845-1  
Governor no. : 0 421 801 423

Customer-spec. information  
Customer : MAN

Engine : D2566 UH/205

1st version kW : 150.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.30...10.40

Del. quantity cm<sup>3</sup>/ : 9.1...9.4

100 s: (8.8...9.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 91.0...94.0

1000 : (88.5...96.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1205...1235

4th rack travel in: 1350

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 315...355

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 10.80...10.90

2nd speed rpm : 1100

Rack travel in m: 10.70...10.90

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100

Del. quantity cm<sup>3</sup>/ : 103.0...107.0

1000 s: (100.0...110.0)

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 81.0...85.0

1000 s: (78.0...88.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 110.0...130.0

1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Del. quantity cm<sup>3</sup>/ : 15.0...20.0

1000 s: (12.5...22.5)

Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

: MAN-NR. 2-7902

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a31  
Edition : 30.09.88  
Replaces : 18.12.87  
Test oil : ISO-4113

Combination no. : 0 402 036 073

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-4  
Governor no. : 0 421 801 425

Customer-spec. information  
Customer : MAN

Engine : D2866KUH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.50...12.60  
-----  
Del. quantity cm<sup>3</sup>/ : 23.8...24.0  
-----  
100 s: (23.5...24.3)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 750  
Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del. quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 750  
Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 880  
Rack travel in m: 12.30...12.50  
4th speed rpm : 925  
Rack travel in m: 11.70...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

E12

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 238.0...244.0  
1000 s: (235.0...247.0)  
Aneroid pressure h: 520  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 191.0...197.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7904

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a34  
Edition : 30.09.88  
Replaces : 6.4.88  
Test oil : ISO-4113

Combination no. : 0 402 036 075

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-5  
Governor no. : 0 421 801 434

Customer-spec. information  
Customer : MAN

Engine : D2866TUH

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 18.5...18.7

100 s : (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h : 1000

Del. quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 350  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 190.0...196.0  
1000 s: (187.0...199.0)

Aneroid pressure h: 350  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 164.0...176.0  
1000 s: (161.0...179.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (201.0...229.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7892

#### APPLICATION

Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 11,9a35  
 Edition : 11.07.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 076  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 4  
 EP type number : 0 412 026 055  
 Governor  
 Governor design. : RQV300...1100PA700-5  
 Governor no. : 0 421 813 713

Customer-spec. information  
 Customer : MAN

Engine : D2866LFG

1st version kW : 243.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.50...1.90

2nd speed rpm : 450  
 travel mm : 2.90...3.50

3rd speed rpm : 850  
 travel mm : 5.50...5.90

4th speed rpm : 1100  
 travel mm : 7.40...7.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 202.0...204.0  
1000 : (199.0...207.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 9.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1100  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 850  
Rack travel in m: 11.00...11.20  
4th speed rpm : 975  
Rack travel in m: 10.70...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85

Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 204.0...206.0  
1000 s: (201.0...209.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j  
Edition : 04.11.88  
Replaces : 16.5.88  
Test oil : ISO-4113

Combination no. : 0 402 036 726

Injection pump  
Pump designation : PES6P120A720LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQ300/1100PA813-2  
Governor no. : 0 421 801 416

Customer-spec. information  
Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s : (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 1200

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in : 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : 470  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7889

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 k  
Edition : 04.11.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 727  
  
Injection pump  
Pump designation : PES6P120A720LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQV300...1100PA876-1  
Governor no. : 0 421 813 670

## Customer-spec. information

Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s : (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 900  
travel mm : 6.00...6.40

4th speed rpm : 1100  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 1200

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 1000  
Rack travel in m: 12.90...13.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : 470  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 k1  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 728  
Injection pump  
Pump designation : PES6P120A720LS3205-1  
EP type number : 0 412 026 732  
Governor  
Governor design. : RQV300...1100PA876-2  
Governor no. : 0 421 813 712

Customer-spec. information  
Customer : MAN

Engine : D2866LXG

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.00

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 800

travel mm : 5.30...5.70

4th speed rpm : 1100

travel mm : 8.00...8.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 150  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 510  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

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Del. quantity cm<sup>3</sup>/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del. quantity cm<sup>3</sup>/ : 17.0...25.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 l  
Edition : 04.11.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 045 700  
  
Injection pump  
Pump designation : PESSP110A820LS3218  
EP type number : 0 412 015 700  
Governor  
Governor design. : RQ300/1100PA327-10  
Governor no. : 0 421 801 457

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM449

1st version kW : 147.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
                  : (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 14.4...14.6

100 s: (14.1...14.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 144.0...146.0

1000 : (141.5...148.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

Testing:

Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 121.0...125.0  
1000 s: (118.0...128.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 l 1  
Edition : 04.11.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 045 701  
Injection pump  
Pump designation : PESSP110A82QLS3218  
EP type number : 0 412 015 700  
Governor  
Governor design. : RQ300/1100PA327-11  
Governor no. : 0 421 801 458

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM449

1st version kW : 140.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
                  : (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.50

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a32  
Edition : 30.09.88  
Replaces : 18.12.87  
Test oil : ISO-4113

Combination no. : 0 402 046 316

Injection pump  
Pump designation : PES6P120A72QLS470  
EP type number : 0 412 026 046  
Governor  
Governor design. : RQ250/1100PA658-11  
Governor no. : 0 421 801 295

Customer-spec. information  
Customer : MAN

Engine : D2866KF

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 23.8...24.0

100 s : (23.5...24.3)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 315...355

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 1100  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 915  
Rack travel in m: 12.30...12.50  
4th speed rpm : 975  
Rack travel in m: 11.60...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.50  
2nd pressure hPa : 400  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 110  
Rack travel in m: 9.40...9.70

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

E28

Speed rpm : 1100  
Del.quantity cm3/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 239.0...245.0  
1000 s: (236.0...248.0)  
Aneroid pressure h: 400  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...200.0  
1000 s: (185.0...203.0)  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7599

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 7  
 Edition : 05.08.88  
 Replaces : 19.5.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 330

Injection pump  
 Pump designation : PES6P120A32ORS419-2  
 EP type number : 0 412 026 048  
 Governor  
 Governor design. : RQ275/1050PAB44  
 Governor no. : 0 421 801 379

Customer-spec. information  
 Customer : RVI

Engine : MIPS062045B

1st version kW : 176.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.00...11.00

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del. quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.20  
Speed rpm : 1105...1120  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.4

Testing:

Speed rpm : 200  
Minimum rack travel: 5.50  
Speed rpm : 275  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 700  
Rack travel in m: 9.70...9.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.30  
2nd pressure hPa : 260  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 230  
Rack travel in m: 8.40...8.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 149.0...155.0  
1000 s: (146.0...158.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 103.0...105.0  
1000 s: (100.0...108.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1105...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.50...3.70

Remarks:

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 8  
Edition : 05.08.88  
Replaces : 19.5.88  
Test oil : ISO-4113

Combination no. : 0 402 046 332

Injection pump  
Pump designation : PES6P120A32ORS419  
EP type number : 0 412 026 037  
Governor  
Governor design. : RQ275/1050PA844-1  
Governor no. : 0 421 801 421

## Customer-spec. information

Customer : RVI

Engine : MIPRO62045A

1st version kW : 210.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 18.5...18.7

100 s : (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.60...4.80

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s : (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h : 700

Del. quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in : 9.10

Speed rpm : 1110...1120

2nd rack travel in : 4.00

Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 4.20

Testing:

Speed rpm : 200  
Minimum rack trave: 5.90  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 310...350

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 360  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 160  
Rack travel in m: 8.60...8.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 168.0...174.0  
1000 s: (165.0...177.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 105.0...107.0  
1000 s: (102.0...110.0)

BREAKAWAY

1st version  
1mm rack travel less than

F04

full load rack tr: 9.10  
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30

Remarks:

:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 d  
Edition : 30.09.88  
Replaces : 7.3.88  
Test oil : ISO-4113

Combination no. : 0 402 046 333

Injection pump  
Pump designation : PES6P120A32ORS514  
EP type number : 0 412 026 052  
Governor  
Governor design. : RQV375...900PA885  
Governor no. : 0 421 813 689

Customer-spec. information  
Customer : RVI

Engine : MIDRO62045

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

F05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.00...1.20

2nd speed rpm : 500

travel mm : 3.00...3.40

3rd speed rpm : 750

travel mm : 5.90...6.30

4th speed rpm : 900

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 62...70

Testing:

1st rack travel in: 11.70  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:

Speed rpm : 100  
Minimum rack trave: 6.90  
Speed rpm : 375  
Rack travel in mm : 5.50...5.50

CONSTANT REGULATION

Speed rpm : 420...590

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 375  
Rack travel in mm : -7.20...-7.40  
Del. quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: BAUDOUIN

APPLICATION

Navy

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : RVI 8,8 m  
 Edition : 05.08.88  
 Replaces : 19.5.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 334

Injection pump  
 Pump designation : PES6P120A320KSS15  
 EP type number : 0 412 026 053  
 Governor  
 Governor design. : RQV300...1150PA527K  
 Governor no. : 0 421 815 164

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062030B

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

F07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1150

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 14.3...14.5

100 s: (14.0...14.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 600.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300

travel mm : 1.70...2.10

2nd speed rpm : 900

travel mm : 5.80...6.20

3rd speed rpm : 1150

travel mm : 7.40...7.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1150

Del. quantity : 143.0...145.0

1000 : (140.0...148.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever

position degrees: 57...65

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1235...1245  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1.450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : 1.80  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 9.20...9.30  
3rd speed rpm : 500  
Rack travel in m: 8.60...8.80  
4th speed rpm : 350  
Rack travel in m: 8.40...8.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 120.0...126.0  
1000 s: (117.0...129.0)  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 67.0...73.0  
1000 s: (64.0...76.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1235...1245

#### STARTING FUEL DELIVERY

F08

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (10.0...22.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 I  
Edition : 26.08.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 336

Injection pump  
Pump designation : PES6P12QA72ORS517  
EP type number : 0 412 026 054  
Governor  
Governor design. : RQ750PA895  
Governor no. : 0 421 801 447

Customer-spec. information  
Customer : MAN

Engine : D2866TUE

1st version kW : 190.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s : (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del. quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in : 10.80

Speed rpm : 750...755

2nd rack travel in : 4.00

Speed rpm : 788...796

4th rack travel in : 900

Speed rpm : 0.00...1.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u  
Edition : 18.10.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 783  
Injection pump  
Pump designation : PES6P110A72ORS3104  
EP type number : 0 412 016 712  
Governor  
Governor design. : RQV300...1150PA850  
Governor no. : 0 421 813 598

Customer-spec. information  
Customer : KHD

Engine : BF6L513R

1st version kW : 177.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 390

travel mm : 2.40...2.70

3rd speed rpm : 460

travel mm : 2.80...3.20

4th speed rpm : 1190

travel mm : 8.40...8.50

5th speed rpm : 1290

travel mm : 9.40...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del. quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

### CONSTANT REGULATION

Speed rpm : 320...480

### TORQUE CONTROL

Dimension a mm : 0.10  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 600  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 950  
Rack travel in m: 13.45...13.60

### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 450  
Pressure hPa : 900  
Rack travel mm : 13.60...13.70

### Measurement

Speed 1/min : 450  
1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 420  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 360  
Rack travel in m: 12.70...12.90

### START CUT-OUT

Speed 1/min : 250 (270)

### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 156.0...160.0  
1000 s: (154.0...162.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1190...1200

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

### APPLICATION

Special-purpose vehicle



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : UNI 9,5 c  
 Edition : 08.06.88  
 Replaces : 11.3.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 790

Injection pump  
 Pump designation : PES6P110A72ORS3140  
 EP type number : 0 412 016 716  
 Governor  
 Governor design. : RQ310/1025PA872  
 Governor no. : 0 421 801 413

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8460.21.611

1st version kW : 162.0  
 Rated speed : 2050

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1025

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 14.6...14.9

100 s : (14.3...15.1)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 310.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s : (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

## 1st version

Speed rpm : 1025

Aneroid pressure h : 700

Del. quantity : 146.0...149.0

1000 : (143.5...151.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

**RATED SPEED**

## 1st version

## Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

## Testing:

1st rack travel in : 11.00

Speed rpm : 1070...1085

2nd rack travel in : 4.00

Speed rpm : 1135...1165

4th rack travel in : 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 310

Rack travel in mm : 7.2

Testing:

Speed rpm : 100

Minimum rack travel: 8.70

Speed rpm : 310

Rack travel in mm : 7.10...7.30

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.30...10.40

2nd pressure hPa : 235

Rack travel in m: 11.40...11.50

3rd pressure hPa : 200

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 108.0...111.0

1000 s: (105.5...113.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1070...1085

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...140.0

1000 s: (116.0...144.0)

Remarks:

F14

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 v 1  
Edition : 01.07.88  
Replaces : 29.1.88  
Test oil : ISO-4113

Combination no. : 0 402 046 794

Injection pump  
Pump designation : PES6P110A72ORS3104  
EP type number : 0 412 016 712  
Governor  
Governor design. : RQV300...107SPA862-1  
Governor no. : 0 421 813 684

Customer-spec. information  
Customer : KHD

Engine : BF6LS13 R/C

1st version kW : 150.0  
Rated speed : 2150

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 13.1...13.3

100 s : (12.8...13.6)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s : (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.50

2nd speed rpm : 450  
travel mm : 2.60...3.20

3rd speed rpm : 700  
travel mm : 4.80...5.40

4th speed rpm : 1110  
travel mm : 7.90...8.10

5th speed rpm : 1230  
travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del. quantity : 131.0...133.0

1000 : (128.0...136.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION  
Speed rpm : 300...480

TORQUE CONTROL  
Dimension a mm : -

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 133.0...139.0  
1000 s: (130.0...142.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1110...1120

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 9,5 d  
Edition : 05.08.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 796  
  
Injection pump  
Pump designation : PES6P110A72ORS3140  
EP type number : 0 412 016 716  
Governor  
Governor design. : RQV275...1150PA501-5  
Governor no. : 0 421 813 694

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8460.21.010

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 13.8...14.1

100 s : (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 2.2...2.7

100 s : (1.9...2.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.10

2nd speed rpm : 400

travel mm : 2.50...2.90

3rd speed rpm : 850

travel mm : 4.90...5.30

4th speed rpm : 1150

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.9

Testing:

Speed rpm : 100  
Minimum rack travel: 8.40  
Speed rpm : 275  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

Speed rpm : 275...520

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 240  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 210  
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 105.0...108.0  
1000 s: (102.5...110.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1190...1200

F18

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 f  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 798  
  
Injection pump  
Pump designation : PES6P120A32ORS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQ275/1050PA893  
Governor no. : 0 421 813 657

## Customer-spec. information

Customer : RVI  
  
Engine : MIDR 062045 M

1st version kW : 236.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 11.50...11.60  
-----  
Del. quantity cm<sup>3</sup>/ : 21.0...21.2  
-----  
100 s : (20.7...21.5)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 275.0  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 2.3...2.9  
100 s : (2.0...3.2)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1000  
Del. quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1115...1130  
2nd rack travel in: 4.00

Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 1050  
Rack travel in m: 11.30...11.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.3...8.50  
2nd pressure hPa : 400  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 160  
Rack travel in m: 8.90...9.10

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 208.0...214.0  
1000 s: (205.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 96.0...98.0  
1000 s: (93.0...101.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1115...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u 1  
Edition : 05.08.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 799  
Injection pump  
Pump designation : PES6P110A72ORS3104  
EP type number : 0 412 016 712  
Governor  
Governor design. : RQV300...107SPA850-1  
Governor no. : 0 421 813 708

Customer-spec. information  
Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 193.0  
Rated speed : 2150

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 14.5...14.7

100 s : (14.2...15.0)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40

2nd speed rpm : 400  
travel mm : 2.70...3.30

3rd speed rpm : 600  
travel mm : 4.20...4.80

4th speed rpm : 1120  
travel mm : 8.40...8.60

5th speed rpm : 1245  
travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h : 900

Del. quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 12.40  
Speed rpm : 1115...1125  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 16...24

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20

## CONSTANT REGULATION

Speed rpm : 300...490

## TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1075  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 600  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 450  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

### Measurement

Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 12.60...12.80  
2nd pressure hPa : 420  
Rack travel in m: 13.20...13.30

## START CUT-OUT

Speed 1/min : 240 (260)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 148.0...152.0  
1000 s: (145.0...155.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1115...1125

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : UNI 9,5 a 2  
 Edition : 30.09.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 800  
 Injection pump  
 Pump designation : PES6P110A72ORS3140  
 EP type number : 0 412 016 716  
 Governor  
 Governor design. : RQV275...1100PA501-6  
 Governor no. : 0 421 813 711

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8460.21.202/206

1st version kW : 176.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 13.9...14.2

100 s : (13.6...14.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 2.2...2.7

100 s : (1.9...2.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.00...1.20

2nd speed rpm : 400  
 travel mm : 2.70...3.00

3rd speed rpm : 850  
 travel mm : 5.00...5.20

4th speed rpm : 1100  
 travel mm : 6.80...7.00

5th speed rpm : 1500  
 travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 139.0...142.0

1000 : (136.5...144.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever  
position degrees: 59...67

Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 275  
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 280...525

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 280  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 230  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 104.0...107.0  
1000 s: (101.5...109.5)

BREAKAWAY

1st version

F24

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u 2  
 Edition : 05.08.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 801  
 Injection pump  
 Pump designation : PES6P110A72ORS3104  
 EP type number : 0 412 016 712  
 Governor  
 Governor design. : RQV300...1150PA850-2  
 Governor no. : 0 421 813 718

Customer-spec. information  
 Customer : KHD

Engine : BF6LS13RC

1st version kW : 231.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 17.2...17.4

100 s : (16.9...17.7)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 650  
 travel mm : 4.20...4.80

4th speed rpm : 1195  
 travel mm : 8.40...8.60

5th speed rpm : 1320  
 travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del. quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.70...7.90

## CONSTANT REGULATION

Speed rpm : 300...490

## TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 700  
Rack travel in m: 14.60...14.80  
3rd speed rpm : 950  
Rack travel in m: 14.50...14.60

## Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 450  
Pressure hPa : 900  
Rack travel mm : 14.60...14.80

Measurement  
Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 530  
Rack travel in m: 14.00...14.10  
3rd pressure hPa : 390  
Rack travel in m: 12.90...13.10

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 176.0...180.0  
1000 s: (173.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

## BREAKAWAY

## 1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 14,9 f3  
 Edition : 24.06.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 048 048  
 Injection pump  
 Pump designation : PES8P120A32ORS507  
 EP type number : 0 412 028 023  
 Governor  
 Governor design. : RQV275...10SOPA665-3  
 Governor no. : 0 421 813 677

Customer-spec. information  
 Customer : RVI

Engine : MIVRO83530 G

1st version kW : 299.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp, °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.70...5.90

Del. quantity cm<sup>3</sup>/ : 1.9...2.5

100 s: (1.6...2.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 275  
 travel mm : 1.20...1.60

2nd speed rpm : 400  
 travel mm : 2.90...3.40

3rd speed rpm : 525  
 travel mm : 3.90...4.30

4th speed rpm : 700  
 travel mm : 5.10...5.50

5th speed rpm : 1050  
 travel mm : 7.30...7.50

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 190.0...192.0  
1000 : (187.0...195.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1105...1115  
2nd rack travel in: 4.10  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

#### CONSTANT REGULATION

Speed rpm : 290...410

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 150  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 115  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

F28

Aneroid pressure h: 700  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 173.0...179.0  
1000 s: (170.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 11,7 e  
 Edition : 27.10.88  
 Replaces : 16.5.88  
 Test oil : ISO-4113

Combination no. : 0 402 076 719

Injection pump  
 Pump designation : PES6P110A82OLS3131-1  
 EP type number : 0 412 016 717  
 Governor  
 Governor design. : RSV350...750POA517  
 Governor no. : 0 421 833 215

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM427

1st version kW : 142.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.3...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 136.0...138.0

1000 : (133.0...141.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

**RATED SPEED**

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 11.20

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0

Testing:

Speed rpm : 100  
Minimum rack trave: 15.00  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 740...750

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Observe VDT-I-420/120  
APPLICATION  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 1  
Edition : 30.09.88  
Replaces : 15.6.88  
Test oil : ISO-4113

Combination no. : 0 402 076 722

Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1100P2A534  
Governor no. : 0 421 833 275

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 HF-050  
1st version kW : 194.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x3,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 12.00...12.10  
-----  
Del. quantity cm<sup>3</sup>/ : 15.6...15.8  
-----  
100 s: (15.4...16.1)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.7)  
-----

2nd speed rpm : 400.0  
Rack travel in mm : 4.8...5.0  
Del. quantity cm<sup>3</sup>/ : 1.7...2.2  
100 s: (1.5...2.5)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del. quantity : 156.5...158.5  
1000 : (154.0...161.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 11.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : 605  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 780  
Rack travel in m: 12.10...12.50  
3rd pressure hPa : 1200  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 174.5...179.5  
1000 s: (172.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 117.5...121.5  
1000 s: (114.5...124.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE32035  
Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : DEE 7,6 y  
 Edition : 30.09.88  
 Replaces : 15.6.88  
 Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump  
 Pump designation : PES6P120A72ORS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534-  
 1

Governer no. : 0 421 833 276

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180,0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

605

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

**RATED SPEED**

1st version

Control lever

position degrees: 40...48

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.60...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 720  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 895  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 173.5...178.5  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:  
: JOHN DEERE # RE32033

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. nrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 e 1  
Edition : 18.10.88  
Replaces : 7.1.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 724  
  
Injection pump  
Pump designation : PES6P110A82OLS3131-1  
EP type number : 0 412 016 717  
Governor  
Governor design. : RSV350...75QPOA536  
Governor no. : 0 421 833 279

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 129.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 14.5...14.7

100 s: (14.2...14.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 145.0...147.0

1000 : (142.5...149.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 11.20

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0

Testing:

Speed rpm : 100  
Minimum rack trave: 15.00  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 740...750

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 f  
Edition : 30.09.88  
Replaces : 15.6.88  
Test oil : ISO-4113

Combination no. : 0 402 076 726

Injection pump  
Pump designation : PES6P110A72ORS3209  
EP type number : 0 412 016 722  
Governor  
Governor design. : RSV400...10S0POA537  
Governor no. : 0 421 833 287

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 AT 06

1st version kW : 172.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.50

609

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 16.7...16.9

100 s : (16.5...17.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s : (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 167.5...169.5

1000 : (165.0...172.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1150...1160

3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 700  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 171.5...176.5  
1000 s: (169.0...179.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 175.0...195.0  
1000 s: (170.0...200.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 16.0...21.0  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE33898

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1 with control-rod  
travel = 10.50 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 b  
Edition : 30.09.88  
Replaces : 15.6.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 727  
  
Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...110CP2A534-  
2  
Governor no. : 0 421 833 290

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 160.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
                  : (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 13.4...13.6

100 s: (13.1...13.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 134.0...136.0

1000 : (131.5...138.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 700  
Rack travel in m: 12.40...12.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : 470  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 605  
Rack travel in m: 11.80...12.20  
3rd pressure hPa : 900  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 165.5...170.5  
1000 s: (163.0...173.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (121.0...131.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 c
Edition : 30.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 728
Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV425...1050P2A489-2
Governor no. : 0 421 833 291

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm3/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del. quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del. quantity : 160.0...162.0

1000 : (157.5...164.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1170  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 725  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 815  
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 191.0...196.0  
1000 s: (188.5...198.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 157.0...161.0  
1000 s: (154.0...164.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. nrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 g  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 730  
Injection pump  
Pump designation : PES6P110A72ORS3217  
EP type number : 0 412 016 724  
Governor  
Governor design. : RSV400...1050P2A534-  
3  
Governor no. : 0 421 833 304

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619AT07

1st version kW : 201.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 18.6...18.8

100 s: (18.3...19.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 2.0...2.5

100 s: (1.8...2.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 186.0...188.0

1000 : (183.5...190.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.70

Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1150...1160  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 700  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 425  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 675  
Rack travel in m: 12.00...12.40  
3rd pressure hPa : 900  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 201.5...206.5  
1000 s: (199.0...209.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 158.0...162.0  
1000 s: (155.0...165.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 20.5...25.5  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE36078

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 g1  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 076 731

Injection pump  
Pump designation : PES6P110A72ORS3217  
EP type number : 0 412 016 724  
Governor  
Governor design. : RSV400...10SOP2A534-  
4  
Governor no. : 0 421 833 305

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 12.60...12.70  
-----  
Del. quantity cm<sup>3</sup>/ : 20.8...21.0  
-----  
100 s : (20.5...21.2)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s : (0.7)  
-----  
2nd speed rpm : 400.0  
Rack travel in mm : 5.2...5.4  
Del. quantity cm<sup>3</sup>/ : 2.0...2.5  
100 s : (1.8...2.8)  
Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del. quantity : 208.0...210.0  
1000 : (205.5...212.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 39...47

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 750  
Rack travel in m: 13.40...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.40...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 310  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 650  
Rack travel in m: 12.60...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 219.5...224.5  
1000 s: (217.0...227.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 161.5...165.5  
1000 s: (158.5...168.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 20.5...25.5  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 a  
Edition : 01.07.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 640 811  
Injection pump  
Pump designation : PE12P120A52QLS7812  
EP type number : 0 412 620 807  
Governor  
Governor design. : RGV25C...1150PA860-1  
Governor no. : 0 421 813 692

Customer-spec. information  
Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
                  : (4.85...5.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3  
                  - 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-

Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm<sup>3</sup>/ : 52.0...60.0 \*

100 s: (-)

3rd speed rpm : 500

Rack travel in mm : < 7.50

Del. quantity cm<sup>3</sup>/ : - \*\*

100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 2.00...2.40

2nd speed rpm : 900

travel mm : 6.70...7.10

3rd speed rpm : 1150

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1300

Del. quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8..16

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 405...465

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 270  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 790  
Rack travel in m: 11.40...11.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

G20

Speed rpm : 500  
Del. quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : <8.00  
Del. quantity cm3/ : <50.0  
1000 s: (-)

Remarks:

\* applies to cylinders 4, 5, 6, 8, 10  
and 12  
\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 b  
 Edition : 27.10.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 812  
 Injection pump  
 Pump designation : PE12P120A520LS7820  
 EP type number : 0 412 620 814  
 Governor  
 Governor design. : RQV350...1150PA870-4  
 Governor no. : 0 421 813 717

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3  
 : - 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 14.30...14.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 31.0...31.2  
 -----  
 100 s: (30.7...31.5)

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 2.10...2.30  
 2nd speed rpm : 700  
 travel mm : 3.90...4.20  
 3rd speed rpm : 1190  
 travel mm : 8.00...8.50  
 4th speed rpm : 1220  
 travel mm : 9.70...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1250  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del. quantity : 310.0...312.0  
1000 : (307.0...315.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 60...68

Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:

Speed rpm : 200  
Minimum rack travel: 6.60  
Speed rpm : 350  
Rack travel in mm : 5.00...5.30

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 6.60...6.90

Measurement

Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 8.00...8.10  
2nd pressure hPa : 1200  
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 310.0...314.0  
1000 s: (307.0...317.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 94.0...96.0  
1000 s: (91.0...99.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : SCA 11,0 u  
 Edition : 02.09.88  
 Replaces : 8.85  
 Test oil : ISO-4113

Combination no. : 0 402 646 801

Injection pump  
 Pump designation : PE6P120A72ORS7001  
 EP type number : 0 412 626 800  
 Governor  
 Governor design. : RQV200...1000PA539  
 Governor no. : 0 421 813 269

Customer-spec. information  
 Customer : SCANIA

Engine : DS11 15

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Date of mfg. : 141

Prestroke mm : 5,00...5,10  
 : (4,95...5,15)

Rack travel in mm : 9.00...12.00  
 Date of mfg. : <052  
 Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s : (19.6...20.4)

Spread cm<sup>3</sup> : 0.6

100 s : (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s : (-)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1165

travel mm : 10.00...10.40

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700  
Aneroid pressure h: 900  
Del. quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 310...370

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 420  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 290  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000

Del. quantity cm<sup>3</sup>/ : 191.0...199.0  
1000 s: (191.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (158.0...166.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 18, 1983  
Start of delivery - engine: 17° before  
TDC  
Firing sequence of engine:



1-5-3-6-2-4.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : SCA 11,0 u1  
 Edition : 01.09.88  
 Replaces : 23.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 802  
 Injection pump  
 Pump designation : PE6P120A72ORS7001  
 EP type number : 0 412 626 800  
 Governor  
 Governor design. : RQV200...1050PAS39  
 Governor no. : 0 421 813 290

Customer-spec. information  
 Customer : SAAB - SCANIA

Engine : DS 11

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
 travel mm : 1.30...1.40

2nd speed rpm : 270  
 travel mm : 1.80...2.10

3rd speed rpm : 340  
 travel mm : 2.40...2.80

4th speed rpm : 1090  
 travel mm : 8.30...8.50

5th speed rpm : 1200  
 travel mm : 9.70...10.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 310...370

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 420  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 290  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 193.0...201.0  
1000 s: (191.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (158.0...166.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 18, 1983  
Engine model DS 11 - 17<sup>o</sup> before top  
dead center.

Firing sequence of engine:  
1-5-3-6-2-4.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,0 v  
Edition : 01.09.88  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 402 646 803

Injection pump  
Pump designation : PE6P120A72ORS7004  
EP type number : 0 412 626 801  
Governor  
Governor design. : RQ750PAS28  
Governor no. : 0 421 801 126

Customer-spec. information  
Customer : SAAB-SCANIA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
Date of mfg. : 141

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 9.00...12.00  
Date of mfg. : <052

H01

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s : (20.6...21.4)

Spread cm<sup>3</sup> : 0.6

100 s : (0.9)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700  
Del. quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Testing:  
1st rack travel in: 11.80  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 784...797  
4th rack travel in: 850  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Testing:  
Speed rpm : 100  
Rack travel in mm : 2.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version  
Rack travel in mm : 4.90...5.10  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

Remarks:

: DS11 43, 44, 45  
: DSI11 42, 45

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 18, 1983  
Start of delivery - engine:  
DS 11 - 17° before TDC  
DSI 11 - 16° before TDC  
Firing sequence of engine:  
1-5-3-6-2-4.

APPLICATION  
Generator

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 11,0 t  
 Edition : 05.08.88  
 Replaces : 13.6.88  
 Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQ300/1050PA762-4  
 Governor no. : 0 421 801 390

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 -360

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del. quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 800  
Rack travel in m: 15.10...15.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1350

H04

Speed rpm : 1050  
Del.quantity cm3/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : WAU 18,0 a  
 Edition : 05.08.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 646 862

Injection pump  
 Pump designation : PE6P130A720RS7112  
 EP type number : 0 412 636 802  
 Governor  
 Governor design. : RQ350/925PA892  
 Governor no. : 0 421 801 441

Customer-spec. information  
 Customer : WAUKESHA

Engine : F180DS/DSI

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

H05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 29.9...30.2  
 100 s : (29.5...30.5)

Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 2.4...3.0  
 100 s : (2.0...3.4)

Spread cm<sup>3</sup> : 1.0  
 100 s : (1.4)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 299.0...302.0  
 1000 : (295.5...305.5)

Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

**RATED SPEED**

## 1st version

Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.5

**Testing:**

1st rack travel in: 12.30  
 Speed rpm : 970...985

2nd rack travel in: 4.00  
 Speed rpm : 1040...1070

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 6.80

Speed rpm : 350

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

Speed rpm : 440...480

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 970...985

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.20...5.40

Del. quantity cm<sup>3</sup>/ : 24.0...30.0

1000 s: (20.0...34.0)

Spread cm<sup>3</sup> : 10.00

1000 s: (14.00)

Remarks:

:

APPLICATION

Navy

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : STE 9,7 d 2  
 Edition : 24.06.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 867  
 Injection pump  
 Pump designation : PE6P120A72ORS7118-1  
 EP type number : 0 412 626 825  
 Governor  
 Governor design. : RQV250..1100PA785-2  
 Governor no. : 0 421 813 710

Customer-spec. information  
 Customer : STEYR

Engine : WD615.98

1st version kW : 228.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

H07

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 18.1...18.3

100 s : (17.8...18.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s : (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.20...1.30

2nd speed rpm : 350  
 travel mm : 1.80...2.20

3rd speed rpm : 410  
 travel mm : 2.30...2.70

4th speed rpm : 1150  
 travel mm : 8.40...8.60

5th speed rpm : 1240  
 travel mm : 9.50...9.80

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 250  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 275...375

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 570  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 360  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm3/ : 190.0...196.0  
1000 s: (187.0...199.0)

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 225.0...265.0  
1000 s: (221.0...269.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
APPLICATION  
Special-purpose vehicle

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : SCA 14,2 a3  
 Edition : 23.09.88  
 Replaces : 21.5.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 801  
 Injection pump  
 Pump designation : PE8P120A920/4LS7002  
 EP type number : 0 412 628 800  
 Governor  
 Governor design. : RQV250...1000PA547  
 Governor no. : 0 421 813 270

Customer-spec. information  
 Customer : SCANIA

Engine : DS14 06

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

H09

Firing order : 1- 2- 7- 3- 4- 5-  
 6- 8

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700  
 -----  
 Rack travel in mm : 13.20...13.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.7...18.9  
 -----  
 100 s: (18.4...19.2)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 225.0  
 Rack travel in mm : 4.9...5.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
 travel mm : 1.20...1.60  
 2nd speed rpm : 350  
 travel mm : 2.40...3.00  
 3rd speed rpm : 650  
 travel mm : 4.50...5.10  
 4th speed rpm : 1045  
 travel mm : 8.40...8.60  
 5th speed rpm : 1165  
 travel mm : 10.00...10.40

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1040  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del. quantity : 187.0...189.0  
 1000 : (184.0...192.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13  
Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 4.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 310...370

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 350  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 230  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 184.0...192.0  
1000 s: (182.0...194.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (135.0...143.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without RO80 diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 19, 1983  
Engine start of delivery: 18° BTDC

Engine firing sequence: 1-5-4-2-6-3-7-8

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 14,2 b  
Edition : 01.09.88  
Replaces : 9.84  
Test oil : ISO-4113  
Combination no. : 0 402 648 804  
Injection pump  
Pump designation : PE8P120A920/4LS7003  
EP type number : 0 412 628 801  
Governor  
Governor design. : RQ900PAS28  
Governor no. : 0 421 801 127

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DS14 41,DSI14 42

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Rack travel in mm : 9.00...12.00

H12

Firing order : 1- 2- 7- 3- 4- 5-  
                  6- 8

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  
-----  
Rack travel in mm : 12.80...12.90  
-----  
Del. quantity cm<sup>3</sup>/ : 18.6...18.8  
-----  
100 s : (18.3...19.1)  
-----  
Spread cm<sup>3</sup> : 0.6  
-----  
100 s : (0.9)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Del. quantity : 186.0...188.0  
1000 : (183.0...191.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Testing:  
1st rack travel in : 11.80  
Speed rpm : 900...905  
2nd rack travel in : 4.00  
Speed rpm : 941...955  
4th rack travel in : 1000  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Testing:  
Speed rpm : 100  
Rack travel in mm : 2.00

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s : (-)  
Rack travel in mm : 20.00...21.00



HIGH IDLE

1st version  
Rack travel in mm : 4.90...5.10  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

Remarks:

:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on 1986-06-04  
Start of delivery - engine:  
DS 14 - 18° before TDC  
DSI 14 - 17° before TDC  
Engine firing sequence: 1-5-4-2-6-3-7-8

APPLICATION  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 4  
Edition : 27.10.88  
Replaces : 29.4.88  
Test oil : IS0-4113

Combination no. : 0 402 648 817

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA762-5  
Governor no. : 0 421 801 399

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500  
-----  
Rack travel in mm : 14.10...14.30  
-----  
Del. quantity cm<sup>3</sup>/ : 20.3...20.5  
-----  
100 s: (20.0...20.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.6  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Aneroid pressure h: 650  
Del. quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30  
4th pressure hPa : 1050  
Rack travel in m: 14.65...14.75  
5th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 3  
 Edition : 12.08.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 402 648 818

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQ300/950PA762-1  
 Governor no. : 0 421 801 304

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 298,0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1,50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  
 -----  
 Rack travel in mm : 14.20...14.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 21.0...21.2  
 -----  
 100 s: (20.7...21.5)  
 -----

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 5.8...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.2...2.0  
 100 s: (0.9...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 750  
 Del. quantity : 210.0...212.0  
 1000 : (207.0...215.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1010  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.00...14.20  
2nd speed rpm : 925  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600  
1st pressure hPa : 320  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 420  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.30...14.40  
4th pressure hPa : 1050  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H17

1st version

Aneroid pressure h: 1050  
Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 211.0...214.0  
1000 s: (208.0...217.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 225.0...228.0  
1000 s: (222.0...231.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 152.0...154.0  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...195.0  
1000 s: (176.0...199.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a  
Edition : 12.08.88  
Replaces : 8.85  
Test oil : ISO-4113

Combination no. : 0 402 648 819

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/900PA762-2  
Governor no. : 0 421 801 305

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 19.2...19.5

100 s : (18.9...19.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.2...2.0

100 s : (0.9...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 750

Del. quantity : 192.0...195.0

1000 : (189.0...198.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10  
Speed rpm : 940...955  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### TORQUE CONTROL

Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 600  
Rack travel in m: 14.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 13.50...13.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 450  
Rack travel in m: 13.20...13.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 209.0...211.0  
1000 s: (206.0...214.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 153.0...155.0  
1000 s: (150.0...158.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 940...955

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 14,7 a 5  
 Edition : 27.10.88  
 Replaces : 11.3.88  
 Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQV300..1050PA797-3  
 Governor no. : 0 421 813 627

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 500  
 -----  
 Rack travel in mm : 14.10...14.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 20.3...20.5  
 -----  
 100 s: (20.0...20.8)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 1075  
 travel mm : 7.40...7.60  
 4th speed rpm : 1100  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.00...9.20

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1125  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version

Speed rpm : 500  
Aneroid pressure h: 650  
Del. quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 54...62

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 17...25

Testing:

Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.40  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60

H21

2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30  
4th pressure hPa : 1050  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks: :

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 f  
 Edition : 11.07.88  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 832

Injection pump  
 Pump designation : PE8P120A320LS7810  
 EP type number : 0 412 628 819  
 Governor  
 Governor design. : RQ300/1050PA858  
 Governor no. : 0 421 801 398

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 368.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 19.50...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 14.30...14.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 23.9...24.1  
 -----  
 100 s: (23.6...24.4)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del. quantity : 239.0...241.0  
 1000 : (236.0...244.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.10  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.20...5.50  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 13.30...15.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600  
1st pressure hPa : 320  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 620  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1100  
Rack travel in m: 14.40...14.50  
4th pressure hPa : 1500  
Rack travel in m: 15.30...15.50  
5th pressure hPa : -  
Rack travel in m: 8.40...8.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 257.0...260.0  
1000 s: (254.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 265.0...269.0  
1000 s: (262.0...272.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 i 1  
Edition : 01.07.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 846

Injection pump  
Pump designation : PE8P120A32OLS7815  
EP type number : 0 412 628 827  
Governor  
Governor design. : RQV350..105CPA870-3  
Governor no. : 0 421 813 700

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 368.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 15.10...15.20  
-----  
Del. quantity cm<sup>3</sup>/ : 25.8...26.0  
-----  
100 s: (25.5...26.3)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 5.2...5.7  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.10  
2nd speed rpm : 700  
travel mm : 4.10...4.50  
3rd speed rpm : 1100  
travel mm : 7.60...8.00  
4th speed rpm : 1200  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1500  
Del. quantity : 258.0...260.0  
1000 : (255.0...263.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

#### CONSTANT REGULATION

Speed rpm : 350...600

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.10...15.20  
2nd speed rpm : 1000  
Rack travel in m: 15.30...15.50  
3rd speed rpm : 930  
Rack travel in m: 15.50...15.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 330  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 600

Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1260  
Rack travel in m: 14.70...14.90  
4th pressure hPa : 1400  
Rack travel in m: 15.10...15.30  
5th pressure hPa : -  
Rack travel in m: 8.80...9.10

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 950  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 239.0...241.0  
1000 s: (236.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 266.0...269.0  
1000 s: (263.0...272.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 194.0...196.0  
1000 s: (191.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (-)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : WAU 24,0 a  
 Edition : 05.08.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 847  
 Injection pump  
 Pump designation : PE8P130A920/4RS7158  
 EP type number : 0 412 638 801  
 Governor  
 Governor design. : RQV350...900PA760-1  
 Governor no. : 0 421 813 617

Customer-spec. information  
 Customer : WAUKESHA

Engine : H24DS/DSI

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 580 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

H27

Firing order : 1- 4- 2- 6- 8- 5  
 - 7- 3

Phasing : 0-45-090-135-180-225  
 -270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900  
 Rack travel in mm : 13.80...13.90  
 Del. quantity cm<sup>3</sup>/ : 36.8...37.1  
 100 s : (26.5...37.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.0...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s : (1.1...2.5)  
 Spread cm<sup>3</sup> : 1.0  
 100 s : (1.4)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.50...1.80  
 2nd speed rpm : 700  
 travel mm : 5.30...5.70  
 3rd speed rpm : 950  
 travel mm : 8.40...8.60

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 950  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 368.5...371.5  
 1000 : (265.0...375.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 350...500

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 940...950

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
:

APPLICATION  
Navy

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : WAU 24,0 a1  
 Edition : 05.08.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 848  
 Injection pump  
 Pump designation : PE8P130A920/4RS7158  
 EP type number : 0 412 638 801  
 Governor  
 Governor design. : RQ350/92SPA892  
 Governor no. : 0 421 801 441

Customer-spec. information  
 Customer : WAUKESHA

Engine : H24DS/DSI

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 8- 5  
 - 7- 3

Phasing : 0-45-090-135-180-225  
 -270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900  
 -----  
 Rack travel in mm : 13.80...13.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 36.8...37.1  
 -----  
 100 s : (36.5...37.5)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s : (1.0)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.0...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s : (1.1...2.5)  
 Spread cm<sup>3</sup> : 1.0  
 100 s : (1.4)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.60...16.40

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 368.5...371.5  
 1000 : (365.0...375.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.0  
 Testing:  
 1st rack travel in : 12.80  
 Speed rpm : 970...985  
 2nd rack travel in : 4.00  
 Speed rpm : 1040...1070



4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 970...985

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
:

APPLICATION  
Navy

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 14,5 d  
 Edition : 04.11.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 850

Injection pump  
 Pump designation : PE8P120AS20LS7818  
 EP type number : 0 412 628 830  
 Governor  
 Governor design. : RQV250...1150PA860  
 Governor no. : 0 421 813 626

Customer-spec. information  
 Customer : MAN

Engine : D2848LXE 40

1st version kW : 500,0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70  
 : (4.55...4.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1150

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm<sup>3</sup>/ : 52.0...60.0 \*

100 s: (-)

3rd speed rpm : 500

Rack travel in mm : 8.20...8.40

Del. quantity cm<sup>3</sup>/ : 12.5 \*\*

100 s: (-)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.50...4.10

3rd speed rpm : 850

travel mm : 6.50...6.90

4th speed rpm : 1150

travel mm : 8.40...8.60

5th speed rpm : 1450

travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1600  
Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 62...70

Testing:

1st rack travel in: 12.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16

Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 425...485

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1600  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 250  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 900  
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

LOW IDLE

Speed rpm : 500  
Rack travel in mm : <7.50  
Del.quantity cm<sup>3</sup>/ : <50.0 \*\*  
1000 s: (-)

Remarks:

: MAN-NR. 7927

\* applies to cylinders 2, 3, 4 and 8  
\*\* applies for cylinders 1, 5, 6, and 7  
APPLICATION  
Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 e  
Edition : 04.11.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 851  
  
Injection pump  
Pump designation : PE8P120A520LS7818  
EP type number : 0 412 628 830  
Governor  
Governor design. : RQV250...1150PA902  
Governor no. : 0 421 813 720

Customer-spec. information  
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70  
                  : (4.55...4.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 28.9...29.1

100 s : (28.6...29.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm<sup>3</sup>/ : 52.0...60.0 \*

100 s : (-)

3rd speed rpm : 500

Rack travel in mm : 8.20...8.40

Del. quantity cm<sup>3</sup>/ : 125.0 \*\*

100 s : (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.40...1.60

2nd speed rpm : 450  
travel mm : 3.40...4.00

3rd speed rpm : 850  
travel mm : 6.30...6.90

4th speed rpm : 1150  
travel mm : 9.40...9.60

5th speed rpm : 1450  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1600  
Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 57...65

Testing:

1st rack travel in: 12.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1280...1310  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 19...27

Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1600  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 250  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 900  
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

LOW IDLE

Speed rpm : 500  
Rack travel in mm : <7.50  
Del.quantity cm3/ : <50.0 \*\*  
1000 s: (-)

Remarks:

: MAN-NR. 7744

\* applies to cylinders 2, 3, 4 and 8  
\*\* applies for cylinders 1, 5, 6, and 7  
APPLICATION  
Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 m  
Edition : 05.08.88  
Replaces : 14.8.87  
Test oil : ISO-4113

Combination no. : 0 402 649 803

Injection pump  
Pump designation : PE10P120A320LS7809-1  
EP type number : 0 412 629 801  
Governor  
Governor design. : RQV300..1050PA797-4  
Governor no. : 0 421 813 654

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kW : 401.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 600  
-----  
Rack travel in mm : 14.70...14.90  
-----  
Del. quantity cm<sup>3</sup>/ : 21.9...22.1  
-----  
100 s: (21.6...22.4)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.6...6.8  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 600  
travel mm : 4.90...5.10  
3rd speed rpm : 800  
travel mm : 5.80...6.10  
4th speed rpm : 1075  
travel mm : 7.40...7.70  
5th speed rpm : 1150  
travel mm : 8.00...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del. quantity : 219.0...221.0  
1000 : (216.0...224.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.60  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 960

JOE

Rack travel in m: 14.80...14.90  
4th pressure hPa : 1100  
Rack travel in m: 15.20...15.40  
5th pressure hPa : -  
Rack travel in m: 11.20...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1300  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 m 1  
 Edition : 02.09.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 649 804

Injection pump  
 Pump designation : PE10P120A32QLS7809-1  
 EP type number : 0 412 629 801  
 Governor  
 Governor design. : RQV300..1050PA797-6  
 Governor no. : 0 421 813 705

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM443 A

1st version kW : 331.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 : - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 12.60...12.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.7...19.0  
 -----  
 100 s: (18.4...19.3)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.4...6.7  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 800  
 travel mm : 5.80...6.10  
 4th speed rpm : 1075  
 travel mm : 7.40...7.70  
 5th speed rpm : 1150  
 travel mm : 8.00...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version

Speed rpm : 1050  
Aneroid pressure h : 900  
Del. quantity : 187.0...190.0  
1000 : (184.0...193.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 11.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 200  
Minimum rack trave: 8.60  
Speed rpm : 300  
Rack travel in mm : 6.40...6.70

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 750  
Rack travel in m: 13.60...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.30...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 380

Rack travel in m: 13.00...13.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 202.0...206.0  
1000 s: (199.0...209.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 18,3 p  
 Edition : 26.08.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 649 805

Injection pump  
 Pump designation : PE10P120A320LS7817  
 EP type number : 0 412 629 803  
 Governor  
 Governor design. : RQ300/1250PA856-1  
 Governor no. : 0 421 801 449

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kW : 400,0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 15.50...15.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 22.4...22.6  
 -----  
 100 s: (22.1...22.9)

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.6...6.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1050  
 Del. quantity : 224.0...226.0  
 1000 : (221.0...229.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1500  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1250  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 800  
Rack travel in m: 16.10...16.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1050  
Rack travel mm : 16.10...16.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 400  
Rack travel in m: 13.20...13.40  
2nd pressure hPa : 750  
Rack travel in m: 15.20...15.40  
3rd pressure hPa : 1250  
Rack travel in m: 16.20...16.40  
4th pressure hPa : 1500  
Rack travel in m: 16.60...16.80  
5th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1250  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 235.0...239.0  
1000 s: (232.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 e  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 649 806  
  
Injection pump  
Pump designation : PE10P12QA52OLS7819  
EP type number : 0 412 629 804  
Governor  
Governor design. : RQV300...1050PA896  
Governor no. : 0 421 813 715

Customer-spec. information  
Customer : MAN

Engine : D 2840 LF

1st version kW : 405.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1,50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 4.90...5.00  
                  : (4.85...5.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 11.40...11.50  
-----  
Del. quantity cm<sup>3</sup>/ : 23.3...23.5  
-----  
100 s : (23.0...23.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s : (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.40  
2nd speed rpm : 500  
travel mm : 3.10...3.70  
3rd speed rpm : 800  
travel mm : 5.50...5.90  
4th speed rpm : 1050  
travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000

Del. quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 320...435

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 900  
Rack travel in m: 11.30...11.40

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 400  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 600

Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 220.0...224.0  
1000 s: (217.0...227.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 156.0...158.0  
1000 s: (153.0...161.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 21,9 y 1  
 Edition : 04.11.88  
 Replaces : 21.8.87  
 Test oil : ISO-4113

Combination no. : 0 402 670 801

Injection pump  
 Pump designation : PE12P120A32QLS7807  
 EP type number : 0 412 620 806  
 Governor  
 Governor design. : RSV350...750POA825-1  
 Governor no. : 0 421 833 248

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 407.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 150...170

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3  
 - 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 15.80...15.90

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 23...31

Testing:

1st rack travel in: 14.80  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack trave: 15.00  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : SCA 11,0 u4  
 Edition : 01.09.88  
 Replaces : 15.6.87  
 Test oil : ISO-4113

Combination no. : 0 402 676 800

Injection pump  
 Pump designation : PE6P120A72ORS7001  
 EP type number : 0 412 626 800  
 Governor  
 Governor design. : RSV350...1100P1/481  
 Governor no. : 0 421 833 121

Customer-spec. information  
 Customer : SAAB-SCANIA

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 5,00...5,10  
 : (4,95...5,15)

Rack travel in mm : 9,00...12,00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 19.9...20.1  
 100 s : (19.6...20.4)

Spread cm<sup>3</sup> : 0.6  
 100 s : (0.9)

2nd speed rpm : 350,0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s : (-)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 6.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 199.0...201.0  
 1000 : (196.0...204.0)

Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
 position degrees: 62...70

Testing:

1st rack travel in: 12.20  
 Speed rpm : 1090...1100

2nd rack travel in: 4.00  
 Speed rpm : 1170...1200

4th rack travel in: 1300  
 Speed rpm : 0.30...1.70



LOW IDLE 1

Control lever

position degrees: 27...35

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 4.0

Speed rpm : 350

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

Speed rpm : 440...500

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del. quantity cm<sup>3</sup>/ : 193.0...201.0

1000 s: (190.0...204.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.40...4.60

Del. quantity cm<sup>3</sup>/ : 13.0...17.0

1000 s: (-)

Spread cm<sup>3</sup> : 3.00

1000 s: (6.00)

Remarks:

: DS11 40, 41, 42

: DSI11 40, 44

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 18, 1983

Start of delivery - engine:

DS 11 - 17° before TDC

DSI 11 - 16° before TDC

Firing sequence of engine:

1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 4  
Edition : 09.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 678 809  
Injection pump  
Pump designation : PE8P120A320LS7801-2  
EP type number : 0 412 628 825  
Governor  
Governor design. : RSV450...1050POA540  
Governor no. : 0 421 833 302

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (4.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  
-----  
Rack travel in mm : 14.40...14.50  
-----  
Del. quantity cm<sup>3</sup>/ : 21.2...21.5  
-----  
100 s: (20.9...21.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 450.0  
Rack travel in mm : 4.9...5.2  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 750  
Del. quantity : 212.0...215.0  
1000 : (209.0...218.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 36...44

Testing:

1st rack travel in: 14.00  
Speed rpm : 1060...1070  
2nd rack travel in: 4.00  
Speed rpm : 1110...1130  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 450  
Rack travel in mm : 4.90...5.20  
Rack travel in mm : 2.00  
Speed rpm : 460...520

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 15.00...15.20  
2nd speed rpm : 850  
Rack travel in m: 15.70...15.90  
3rd speed rpm : 925  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.600

Measurement

Speed 1/min : 600

1st pressure hPa : 450  
Rack travel in m: 12.80...13.00  
2nd pressure hPa : 550  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 950  
Rack travel in m: 14.90...15.10  
4th pressure hPa : 1250  
Rack travel in m: 15.70...15.90  
5th pressure hPa : -

Rack travel in m: 11.60...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1250  
Speed rpm : 1030  
Del. quantity cm<sup>3</sup>/ : 230.0...232.0  
1000 s: (227.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 242.0...245.0  
1000 s: (239.0...248.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 1060...1070

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

APPLICATION  
Forage harvester

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 g 5  
 Edition : 09.09.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 678 810  
 Injection pump  
 Pump designation : PE8P120A320LS7801-2  
 EP type number : 0 412 628 825  
 Governor  
 Governor design. : RSV450...1050POA541  
 Governor no. : 0 421 833 303

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 260.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (4.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1030  
 -----  
 Rack travel in mm : 12.70...12.80  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.1...18.3  
 -----  
 100 s: (17.8...18.6)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 450.0  
 Rack travel in mm : 4.9...5.2  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1030  
 Aneroid pressure h: 1100  
 Del. quantity : 181.0...183.0  
 1000 : (178.0...186.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 36...44

Testing:

1st rack travel in: 11.70  
Speed rpm : 1060...1070  
2nd rack travel in: 4.00  
Speed rpm : 1110...1130  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 450  
Rack travel in mm : 4.90...5.20  
Rack travel in mm : 2.00  
Speed rpm : 460...520

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 950  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 800  
Rack travel in m: 13.80...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : 420  
Rack travel in m: 11.90...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1060...1070

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 c  
Edition : 05.08.88  
Replaces : 10.85  
Test oil : ISO-4113

Combination no. : 0 402 745 800

Injection pump  
Pump designation : PESSP120A72QLS7101  
EP type number : 0 412 725 800  
Governor  
Governor design. : RQ300/1050PA690  
Governor no. : 0 421 801 234

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 350  
Rack travel in m: 13.30...13.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 197.0...201.0  
1000 s: (194.0...204.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 m  
 Edition : 07.10.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 745 805

Injection pump  
 Pump designation : PESSP120A72QLS7160  
 EP type number : 0 412 725 802  
 Governor  
 Governor design. : RQ300/1050PA774-2  
 Governor no. : 0 421 801 450

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184,0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0



Testing:

1st rack travel in: 12.60  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack trave: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.30...6.60  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.60...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 250  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.50...12.70  
3rd pressure hPa : 750  
Rack travel in m: 13.20...13.30  
4th pressure hPa : 1200  
Rack travel in m: 14.00...14.20  
5th pressure hPa : -  
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : BAO 15,9 b  
 Edition : 05.08.88  
 Replaces : 1.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 803  
 Injection pump  
 Pump designation : PES6P120A32ORS7105  
 EP type number : 0 412 726 800  
 Governor  
 Governor design. : RQV400...750PA730-1  
 Governor no. : 0 421 813 487

Customer-spec. information  
 Customer : BAUDOUIN

Engine : 6P15-2

1st version kW : 450.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 3.6...4.0

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Testing:

1st rack travel in: 12.80

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 900

Speed rpm : 0.00...1.00

**LOW IDLE 1**

Control lever

position degrees: 4...12

Testing:

Speed rpm : 100

Minimum rack trave: 5.30

Speed rpm : 400  
Rack travel in mm : 3.70...3.90  
Rack travel in mm : 2.00

START CUT-OUT

Speed 1/min : 340 (360)

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 3.60...4.00  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION  
Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a  
Edition : 07.10.88  
Replaces : 8.4.88  
Test oil : ISO-4113

Combination no. : 0 402 746 810

Injection pump  
Pump designation : PES6P120A720RS713S  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV32S...900PA848K  
Governor no. : 0 421 815 168

## Customer-spec. information

Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

K01

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del. quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 3.10...3.30

3rd speed rpm : 850  
travel mm : 5.90...6.10

4th speed rpm : 1000  
travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 236.5...238.5

1000 : (233.5...241.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 12.90  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 5.50  
Speed rpm : 325  
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 625  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.10  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 275  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.30...12.70

K02

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 625  
Del. quantity cm<sup>3</sup>/ : 257.0...263.0  
1000 s: (254.0...266.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (134.0...142.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.00...4.20  
Del. quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a2  
Edition : 07.10.88  
Replaces : 15.4.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 815  
  
Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...850PA848-2K  
Governor no. : 0 421 815 170

Customer-spec. information  
Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0  
Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 2.80...3.10

3rd speed rpm : 850  
travel mm : 6.20...6.40

4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.00  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 700  
Rack travel in m: 12.50...12.70  
4th speed rpm : 500  
Rack travel in m: 0.00...12.40

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.90  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 360  
Rack travel in m: 11.50...11.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 210.5...216.5  
1000 s: (207.5...219.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (142.0...150.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 9.50...9.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:

Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a3  
Edition : 07.10.88  
Replaces : 7.1.88  
Test oil : ISO-4113

Combination no. : 0 402 746 816

Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...87SPA848-3K  
Governor no. : 0 421 815 171

## Customer-spec. information

Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875  
-----  
Rack travel in mm : 10.80...10.90  
-----  
Del. quantity cm<sup>3</sup>/ : 16.3...16.5  
-----  
100 s: (16.0...16.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.5...4.7  
Del. quantity cm<sup>3</sup>/ : 3.9...4.5  
100 s: (3.7...4.7)  
-----  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.80...3.20  
3rd speed rpm : 850  
travel mm : 6.20...6.40  
4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 875  
Aneroid pressure h: 1200  
Del. quantity : 163.0...165.0  
1000 : (160.0...168.0)



Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 9.80  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 510  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 700  
Rack travel in m: 11.60...11.80  
4th speed rpm : 550  
Rack travel in m: 0.00...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.20

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.10...9.50  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

K06

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del. quantity cm3/ : 240.0...246.0  
1000 s: (237.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm3/ : 146.0...150.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 165.0...205.0  
1000 s: (155.0...215.0)  
Rack travel in mm : 9.10...9.50

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a4  
Edition : 07.10.88  
Replaces : 12.11.87  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 817  
  
Injection pump  
Pump designation : PES6P120A720RS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...900PA848-4K  
Governor no. : 0 421 815 173

Customer-spec. information  
Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.60...14.70

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s : (23.8...24.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del. quantity cm<sup>3</sup>/ : 3.9...4.5

100 s : (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 3.10...3.30

3rd speed rpm : 850  
travel mm : 5.90...6.10

4th speed rpm : 1000  
travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 241.5...243.5

1000 : (238.5...246.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 13.60  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.40  
Speed rpm : 325  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.60...14.70  
2nd speed rpm : 625  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 800  
Rack travel in m: 14.70...14.80  
4th speed rpm : 500  
Rack travel in m: 0.00...14.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 14.90...15.10

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 280  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 650  
Rack travel in m: 13.30...13.70

K08

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 625  
Del. quantity cm<sup>3</sup>/ : 265.0...271.0  
1000 s: (262.0...274.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.70...9.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAC 11,1 a5  
 Edition : 07.10.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 818  
 Injection pump  
 Pump designation : PES6P120A72ORS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RGV325...875PA848-5K  
 Governor no. : 0 421 815 174

Customer-spec. information  
 Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 202.0  
 Rated speed : 1750

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 875

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 19.0...19.2

100 s : (18.7...19.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 3.7...4.3

100 s : (3.5...4.5)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del. quantity : 190.0...192.0

1000 : (187.0...195.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.20  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 510  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 700  
Rack travel in m: 13.20...13.40  
4th speed rpm : 400  
Rack travel in m: 0.00...13.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 280  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 485  
Rack travel in m: 12.70...13.30

K10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 262.5...268.5  
1000 s: (259.5...271.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 9.40...9.60

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 37.0...43.0  
1000 s: (35.0...45.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a6
Edition : 07.10.88
Replaces : 7.1.88
Test oil : ISO-4113
Combination no. : 0 402 746 819
Injection pump
Pump designation : PES6P120A720RS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...875PA848-6K
Governor no. : 0 421 815 175

Customer-spec. information
Customer : MACK

Engine : EM6-225L 4VH
1st version kW : 165.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 2 417 413 011
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 101
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,6
Test lines : 1 680 750 008
Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85
(2.70...2.90)
Rack travel in mm : 10.30...10.70
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875
Rack travel in mm : 11.00...11.10
Del. quantity cm3/ : 15.8...16.0
100 s: (15.5...16.3)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.6...4.8
Del. quantity cm3/ : 3.8...4.4
100 s: (3.6...4.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.10
3rd speed rpm : 850
travel mm : 6.20...6.40
4th speed rpm : 1000
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 900
Del. quantity : 158.5...160.5
1000 : (155.5...163.5)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 10.00  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 510  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 600  
Rack travel in m: 12.50...12.70  
4th speed rpm : 700  
Rack travel in m: 11.80...12.00  
5th speed rpm : 350  
Rack travel in m: 0.00...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 220  
Rack travel in m: 9.70...9.80

3rd pressure hPa : 500  
Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm3/ : 234.0...240.0  
1000 s: (231.0...243.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.50...8.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 b5  
Edition : 07.10.88  
Replaces : 15.4.88  
Test oil : ISO-4113

Combination no. : 0 402 746 820

Injection pump  
Pump designation : PES6P120A72ORS713S  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...850PA878K  
Governor no. : 0 421 815 177

## Customer-spec. information

Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0  
Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  
-----  
Rack travel in mm : 12.00...12.10  
-----  
Del. quantity cm<sup>3</sup>/ : 18.1...18.3  
-----  
100 s : (17.8...18.6)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.5...4.7  
Del. quantity cm<sup>3</sup>/ : 3.2...3.8  
100 s : (3.0...4.0)  
-----  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.80...3.10  
3rd speed rpm : 850  
travel mm : 6.20...6.40  
4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1110  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h : 900  
Del. quantity : 181.0...183.0  
1000 : (178.0...186.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

#### Testing:

1st rack travel in: 11.00  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 700  
Rack travel in m: 12.50...12.70  
4th speed rpm : 500  
Rack travel in m: 0.00...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.90  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 360  
Rack travel in m: 11.50...11.90

K14

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 210.5...216.5  
1000 s: (207.5...219.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (142.0...150.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 9.50...9.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAC 11,1 b1  
 Edition : 07.10.88  
 Replaces : 8.4.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 822  
 Injection pump  
 Pump designation : PES6P120A72ORS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...900PA878-2K  
 Governor no. : 0 421 815 179

Customer-spec. information  
 Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0  
 Rated speed : 1800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900  
 -----  
 Rack travel in mm : 13.90...14.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 23.6...23.8  
 -----  
 100 s: (23.3...24.1)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 325.0  
 Rack travel in mm : 4.0...4.2  
 Del. quantity cm<sup>3</sup>/ : 3.2...3.8  
 100 s: (3.0...4.0)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 325  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.10...3.30  
 3rd speed rpm : 850  
 travel mm : 5.90...6.10  
 4th speed rpm : 1000  
 travel mm : 7.50...7.70

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 7.00...13.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 900  
 Del. quantity : 236.5...238.5  
 1000 : (233.5...241.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 12.90  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 5.50  
Speed rpm : 325  
Rack travel in mm : 4.00...4.20

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 625  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.10  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 275  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.30...12.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 625  
Del. quantity cm<sup>3</sup>/ : 257.0...263.0  
1000 s: (254.0...266.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (134.0...142.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.00...4.20  
Del. quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MAC 11,1 b2  
 Edition : 07.10.88  
 Replaces : 2.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 823  
 Injection pump  
 Pump designation : PES6P120A72ORS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...875PA878-3K  
 Governor no. : 0 421 815 180

Customer-spec. information

Customer : MACK  
 Engine : EM6-275L 4VH  
 1st version kW : 202.0  
 Rated speed : 1750

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 011  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 875  
 -----  
 Rack travel in mm : 12.20...12.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 19.0...19.2  
 -----  
 100 s: (18.7...19.5)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 325.0  
 Rack travel in mm : 4.6...4.8  
 Del. quantity cm<sup>3</sup>/ : 3.7...4.3  
 100 s: (3.5...4.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 325  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 2.80...3.10  
 3rd speed rpm : 850  
 travel mm : 6.20...6.40  
 4th speed rpm : 1000  
 travel mm : 7.70...7.90

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 7.00...13.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 1200  
 Del. quantity : 190.0...192.0  
 100) : (187.0...195.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.20  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 510  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 700  
Rack travel in m: 13.20...13.40  
4th speed rpm : 400  
Rack travel in m: 0.00...13.80

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 280  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 485  
Rack travel in m: 12.70...13.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 262.5...268.5  
1000 s: (259.5...271.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 9.40...9.60

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 37.0...43.0  
1000 s: (35.0...45.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAC 11,1 b3  
 Edition : 07.10.88  
 Replaces : 7.1.88  
 Test oil : ISO-4113

Combination no. : 0 402 746 824

Injection pump  
 Pump designation : PES6P120A72ORS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...875PA878-4K  
 Governor no. : 0 421 815 181

Customer-spec. information  
 Customer : MACK

Engine : EM6-225L 4VH

1st version kW : 165.0  
 Rated speed : 1750

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.10

3rd speed rpm : 850  
 travel mm : 6.20...6.40

4th speed rpm : 1000  
 travel mm : 7.70...7.90

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 875

Aneroid pressure h: 900

Del. quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 10.00  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Rack travel in mm : 4.7

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 510  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 600  
Rack travel in m: 12.50...12.70  
4th speed rpm : 700  
Rack travel in m: 11.80...12.00  
5th speed rpm : 350  
Rack travel in m: 0.00...13.20

Aneroid/Altitude  
Compensator test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 220

Rack travel in m: 9.70...9.80  
3rd pressure hPa : 500  
Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 234.0...240.0  
1000 s: (231.0...243.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.50...8.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 b6  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 825  
  
Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...900PA878-SK  
Governor no. : 0 421 815 182

## Customer-spec. information

Customer : MACK  
  
Engine : EC6-350 4VH

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
-----  
Rack travel in mm : 14.60...14.70  
-----  
Del. quantity cm<sup>3</sup>/ : 24.1...24.3  
-----  
100 s : (23.8...24.6)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 3.9...4.5  
100 s : (3.7...4.7)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 3.10...3.30  
3rd speed rpm : 850  
travel mm : 5.90...6.10  
4th speed rpm : 1000  
travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h : 1200  
Del. quantity : 241.5...243.5  
1000 : (238.5...246.5)



Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 13.60  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.40  
Speed rpm : 325  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.60...14.70  
2nd speed rpm : 625  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 800  
Rack travel in m: 14.70...14.80  
4th speed rpm : 500  
Rack travel in m: 0.00...14.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 14.90...15.10

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 280  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 650  
Rack travel in m: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 625  
Del. quantity cm3/ : 265.0...271.0  
1000 s: (262.0...274.0)  
Spread cm3 : 8.00  
1000 s: (12.00)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm3/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.70...9.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.10  
Del. quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 b4  
Edition : 07.10.88  
Replaces : 7.1.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 826  
  
Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...875PA878-6K  
Governor no. : 0 421 815 183

## Customer-spec. information

Customer : MACK  
  
Engine : EM6-250L 4VH  
  
1st version kW : 186.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 2 417 413 011  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 101  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,6  
  
Test lines : 1 680 750 008  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
  
Tolerance + - ° : 0.50 (0.75)  
  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875  
-----  
Rack travel in mm : 10.80...10.90  
-----  
Del. quantity cm<sup>3</sup>/ : 16.3...16.5  
-----  
100 s: (16.0...16.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.5...4.7  
Del. quantity cm<sup>3</sup>/ : 3.9...4.5  
100 s: (3.7...4.7)  
-----  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.80...3.20  
3rd speed rpm : 850  
travel mm : 6.20...6.40  
4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 875  
Aneroid pressure h: 1200  
Del. quantity : 163.0...165.0  
1000 : (160.0...168.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 9.80  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 510  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 700  
Rack travel in m: 11.60...11.80  
4th speed rpm : 550  
Rack travel in m: 0.00...13.10

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.20

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.10...9.50  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

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#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 240.0...246.0  
1000 s: (237.0...249.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (155.0...215.0)  
Rack travel in mm : 9.10...9.50

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 c  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 827  
  
Injection pump  
Pump designation : PES6P120A72ORS7148  
EP type number : 0 412 726 810  
Governor  
Governor design. : RQV325...875PA848-7K  
Governor no. : 0 421 815 176

Customer-spec. information  
Customer : MACK

Engine : EM6 300L 4VH

1st version kW : 224.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.00...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s : (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm<sup>3</sup>/ : 3.9...4.5

100 s : (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 2.50...2.80

3rd speed rpm : 600  
travel mm : 4.10...4.30

4th speed rpm : 875  
travel mm : 7.30...7.50

5th speed rpm : 1000  
travel mm : 8.70...9.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1500

Del. quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 510  
Rack travel in m: 16.50...16.70  
3rd speed rpm : 700  
Rack travel in m: 13.30...13.50  
4th speed rpm : 600  
Rack travel in m: 15.50...15.70  
5th speed rpm : 450  
Rack travel in m: 0.00...16.60

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 510  
Pressure hPa : 1500  
Rack travel mm : 16.50...16.70

##### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.30...8.70

2nd pressure hPa : 370  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 710  
Rack travel in m: 14.40...14.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1500  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 299.0...305.0  
1000 s: (296.0...308.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 152.5...156.5  
1000 s: (150.5...158.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 d  
Edition : 07.10.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 828  
Injection pump  
Pump designation : PES6P120A72ORS7148  
EP type number : 0 412 726 810  
Governor  
Governor design. : RQV325...875PA878-7K  
Governor no. : 0 421 815 184

## Customer-spec. information

Customer : MACK  
Engine : EM6 300L 4VH  
1st version kW : 224.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
Overflow valve : 2 417 413 011  
Inlet press., bar : 1.50  
Test nozzle holder assembly : 1 688 901 101  
Opening pressure, bar : 207...210  
Orifice plate diameter mm : 0,6  
Test lines : 1 680 750 008  
Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.00...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875  
-----  
Rack travel in mm : 11.10...11.20  
-----  
Del. quantity cm<sup>3</sup>/ : 19.9...20.1  
-----  
100 s : (19.6...20.4)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.5...4.7  
Del. quantity cm<sup>3</sup>/ : 3.9...4.5  
100 s : (3.7...4.7)  
-----  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.50...2.80  
3rd speed rpm : 600  
travel mm : 4.10...4.30  
4th speed rpm : 875  
travel mm : 7.30...7.50  
5th speed rpm : 1000  
travel mm : 8.70...9.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1040  
Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 875  
Aneroid pressure h: 1500

Del. quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 10.10  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 510  
Rack travel in m: 16.50...16.70  
3rd speed rpm : 700  
Rack travel in m: 13.30...13.50  
4th speed rpm : 600  
Rack travel in m: 15.50...15.70  
5th speed rpm : 450  
Rack travel in m: 0.00...16.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1500  
Rack travel mm : 16.50...16.70

#### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.30...8.70

2nd pressure hPa : 370  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 710  
Rack travel in m: 14.40...14.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 510  
Del. quantity cm<sup>3</sup>/ : 299.0...305.0  
1000 s: (296.0...308.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 152.5...156.5  
1000 s: (150.5...158.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a7  
Edition : 07.10.88  
Replaces : 7.1.88  
Test oil : ISO-4113  
Combination no. : 0 402 746 829  
Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325..10SOPA848-8K  
Governor no. : 0 421 815 185

## Customer-spec. information

Customer : MACK  
Engine : E6-270 4VH  
1st version kW : 201.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
Overflow valve : 2 417 413 011  
Inlet press., bar : 1.50  
Test nozzle holder assembly : 1 688 901 101  
Opening pressure, bar : 207...210  
Orifice plate diameter mm : 0,6  
Test lines : 1 680 750 008  
Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 12.20...12.30  
-----  
Del. quantity cm<sup>3</sup>/ : 17.4...17.6  
100 s : (17.1...17.9)  
-----  
Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 3.8...4.4  
100 s : (3.6...4.6)  
-----  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 2.50...2.80  
3rd speed rpm : 800  
travel mm : 4.80...5.00  
4th speed rpm : 1050  
travel mm : 7.30...7.60  
5th speed rpm : 1200  
travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1210  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900



Del. quantity : 174.0...176.0  
1000 : (171.0...179.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.40  
Speed rpm : 325  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 325...600

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 630  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 925  
Rack travel in m: 11.90...12.10  
4th speed rpm : 800  
Rack travel in m: 12.20...12.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 630  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 630

1st pressure hPa : -  
Rack travel in m: 8.60...9.00  
2nd pressure hPa : 270  
Rack travel in m: 9.60...9.70

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3rd pressure hPa : 400  
Rack travel in m: 11.00...11.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 630  
Del. quantity cm<sup>3</sup>/ : 192.0...198.0  
1000 s: (189.0...201.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.60...9.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a10  
 Edition : 07.10.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 831  
 Injection pump  
 Pump designation : PES6P120A72ORS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325..10SOPA848-9K  
 Governor no. : 0 421 815 187

Customer-spec. information  
 Customer : MACK

Engine : EM6 300 2VH

1st version kW : 224.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 9 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s : (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 3.8...4.4

100 s : (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60

2nd speed rpm : 450  
 travel mm : 2.50...2.80

3rd speed rpm : 800  
 travel mm : 4.80...5.00

4th speed rpm : 1050  
 travel mm : 7.30...7.60

5th speed rpm : 1200  
 travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1200  
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h : 900

Del. quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 325...600

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 630  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 500  
Rack travel in m: 0.00...12.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 630  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 630

1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 190  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 410  
Rack travel in m: 11.40...11.80

L04

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 630  
Del. quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 121.0...125.0  
1000 s: (119.0...127.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 110.0...150.0  
1000 s: (100.0...160.0)  
Rack travel in mm : 7.80...8.20

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a9  
Edition : 07.10.88  
Replaces : 7.3.88  
Test oil : ISO-4113

Combination no. : 0 402 746 833

Injection pump  
Pump designation : PES6P120A72ORS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...97SPA848-11  
K  
Governor no. : 0 421 815 190

Customer-spec. information  
Customer : MACK

Engine : E6-350 2VH

1st version kW : 257.0  
Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

LOS

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 14.10...14.20

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.40...1.60

2nd speed rpm : 450  
travel mm : 2.50...2.80

3rd speed rpm : 800  
travel mm : 4.80...5.00

4th speed rpm : 1050  
travel mm : 7.30...7.60

5th speed rpm : 1200  
travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 900  
Del. quantity : 230.5...232.5  
1000 : (227.5...235.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 13.10  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...600

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90  
3rd speed rpm : 600  
Rack travel in m: 0.00...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 13.80...13.90

##### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 240  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 510

L06

Rack travel in m: 12.20...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 237.0...233.0  
1000 s: (224.0...236.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 110.0...150.0  
1000 s: (100.0...160.0)  
Rack travel in mm : 7.80...8.20

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

#### APPLICATION Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : UNI 9,5 e  
 Edition : 30.09.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 834  
 Injection pump  
 Pump designation : PES6P120A72ORS7154  
 EP type number : 0 412 726 811  
 Governor  
 Governor design. : RQV275...1100PA888K  
 Governor no. : 0 421 815 191

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8460.41.102

1st version kW : 235.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar : 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 19.8...20.0

100 s : (19.5...20.3)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 275  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 3.10...3.90

3rd speed rpm : 800  
 travel mm : 6.30...6.70

4th speed rpm : 1100  
 travel mm : 9.70...9.90

5th speed rpm : 1200  
 travel mm : 13.00...14.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200

Del. quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 280...400

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 1100  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 950  
Rack travel in m: 11.90...12.10  
4th speed rpm : 750  
Rack travel in m: 11.90...12.10  
5th speed rpm : 400  
Rack travel in m: 11.30...11.50

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 12.20...12.30

##### Measurement

Speed 1/min : 850

1st pressure hPa : -  
Rack travel in m: 9.00...9.20

L08

2nd pressure hPa : 400  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 270  
Rack travel in m: 9.50...9.70

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Aneroid pressure h: 1200  
Speed rpm : 400  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 110.0...130.0  
1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 12,0 a 2  
 Edition : 09.09.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 841  
 Injection pump  
 Pump designation : PES6P120A720LS7114-2  
 EP type number : 0 412 726 815  
 Governor  
 Governor design. : RQ300/1050PA774-3  
 Governor no. : 0 421 801 451

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265,0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 18.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1500  
 Del. quantity : 229.0...231.0  
 1000 : (226.0...234.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 19.5



Testing:

1st rack travel in: 13.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 700  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 500  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1100  
Rack travel in m: 14.20...14.40  
4th pressure hPa : 1500  
Rack travel in m: 14.70...14.90  
5th pressure hPa : -  
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm3/ : 234.0...238.0  
1000 s: (233.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm3/ : 246.0...249.0  
1000 s: (243.0...252.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 c  
 Edition : 09.09.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 776 805  
 Injection pump  
 Pump designation : PES6P120A720LS7155  
 EP type number : 0 412 726 812  
 Governor  
 Governor design. : RSV350..1050POA529-1  
 Governor no. : 0 421 833 295

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.8

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1400

Del. quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 12.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.6  
Speed rpm : 350  
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 825  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 950  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 11.90...12.10  
3rd pressure hPa : 850  
Rack travel in m: 13.70...13.90  
4th pressure hPa : 1400  
Rack travel in m: 14.30...14.50  
5th pressure hPa : -  
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

L12

Aneroid pressure h: 650  
Speed rpm : 600  
Del.quantity cm3/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 825  
Del.quantity cm3/ : 263.0...266.0  
1000 s: (260.0...269.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 151.0...154.0  
1000 s: (148.0...157.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 D 8  
 Edition : 27.10.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 436 104FA  
 Injection pump  
 Pump designation : PES6MW100/120RS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV350...1200MW82-1  
 Governor no. : 0 420 083 153

Cust. part no. : 3916000

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-830

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 12.10...12.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.8...14.0  
 -----  
 100 s: (13.6...14.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 7.1...7.2  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s: (1.0...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1250  
 travel mm : 7.60...7.80  
 2nd speed rpm : 1350  
 travel mm : 8.60...9.00  
 3rd speed rpm : 350  
 travel mm : 1.20...1.60  
 4th speed rpm : 800  
 travel mm : 4.90...5.50

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del. quantity : 138.0...140.0  
 1000 : (136.0...142.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.10  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1455  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.20

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 1000  
Rack travel in m: 12.10...12.20  
4th speed rpm : 900  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 480  
Rack travel in m: 11.60...11.90  
3rd pressure hPa : 700  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 139.0...142.0  
1000 s: (136.5...144.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 100.0...102.0  
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.20  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 D 5  
 Edition : 24.10.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 436 106

Injection pump  
 Pump designation : PES6MW100/12ORS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV350...1100MW78-2  
 Governor no. : 0 420 083 160

Cust. part no. : 3908567

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-8.3

1st version kW : 179.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

L15

Test pressure, bar : 30...32

Prestroke mm : 3.05...3.15  
 : (3.00...3.20)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s : (14.8...15.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1240

travel mm : 8.80...9.20

2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40

4th speed rpm : 350

travel mm : 1.20...1.60

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h : 900

Del. quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1330  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.4

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 360...550

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 230  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 490  
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 76.0...78.0  
1000 s: (74.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 D 4  
Edition : 30.09.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 436 107  
Injection pump  
Pump designation : PES6MW100/12ORS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV350...1100MW82-2  
Governor no. : 0 420 083 161

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 186.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15  
                  : (3.00...3.20)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 15.2...15.4

100 s: (15.0...15.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.2...7.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 9.00...9.40

2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40

4th speed rpm : 350

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 152.0...154.0

1000 : (150.0...156.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version



Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.3

Testing:

Speed rpm : 100  
Minimum rack travel: 8.80  
Speed rpm : 350  
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.50...13.60  
3rd speed rpm : 900  
Rack travel in m: 12.90...13.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.50...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 570  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 900  
Rack travel in m: 13.50...13.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 160.5...163.5  
1000 s: (158.0...166.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 17  
Edition : 30.09.88  
Replaces : 13.06.88  
Test oil : ISO-4113

Combination no. : 0 403 446 150

Injection pump  
Pump designation : PES6MW100/72ORS1120  
EP type number : 0 413 406 112  
Governor  
Governor design. : RGV300...1300MW59  
Governor no. : 0 420 083 077

Customer-spec. information  
Customer : DB

Engine : OM366LA

1st version kW : 141.7  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.2

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.20

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : -  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 280  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 75.5...78.5  
1000 s: (73.0...81.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 47.0...49.0  
1000 s: (45.0...51.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.20  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 6,0 D 47  
 Edition : 30.09.88  
 Replaces : 13.06.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 156

Injection pump  
 Pump designation : PES6MW100/72ORS1120  
 EP type number : 0 413 406 112  
 Governor  
 Governor design. : RQV300...1300MWS9  
 Governor no. : 0 420 083 077

Customer-spec. information  
 Customer : DB

Engine : 0M366LA

1st version kW : 141.7  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm<sup>3</sup> : 0,3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0,3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 11.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.10

CONSTANT REGULATION

Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : -  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 280  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 75.5...78.5  
1000 s: (73.0...81.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 47.0...49.0  
1000 s: (45.0...51.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.10  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 6,0 D 9  
 Edition : 24.10.88  
 Replaces : 16.05.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 158

Injection pump  
 Pump designation : PES6MW100/72ORS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RQV300...1300MWS0-1  
 Governor no. : 0 420 083 089

Customer-spec. information  
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.2

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1450

travel mm : 9.40...10.20

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.60...2.80

4th speed rpm : 300

travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.10...6.20

CONSTANT REGULATION  
Speed rpm : 350...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 170  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 225  
Rack travel in m: 11.80...12.10  
3rd pressure hPa : 700  
Rack travel in m: 12.20...12.30

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 575  
Del. quantity cm<sup>3</sup>/ : 82.0...85.0  
1000 s: (79.5...87.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 50.5...52.5  
1000 s: (48.5...54.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.20  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB 6,0 D 11  
 Edition : 08.06.88  
 Replaces : 11.85  
 Test oil : ISO-4113

Combination no. : 0 403 446 168

Injection pump  
 Pump designation : PES6MW100/72ORS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RQV300...1300MW67  
 Governor no. : 0 420 083 099

Customer-spec. information  
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s : (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.2

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1425

travel mm : 9.30...9.70

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**



1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1345...1355  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.10...6.20

CONSTANT REGULATION  
Speed rpm : 350...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 370  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : -  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 470  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 80.0...84.0  
1000 s: (78.0...86.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 48.0...50.0  
1000 s: (46.0...52.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1345...1355

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 88.0...98.0  
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.20  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

At 1300 1/min and 700 hPa charge-air pressure, adjust reduced-delivery lever to 11.5...11.6 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 25  
 Edition : 30.09.88  
 Replaces : 30.05.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 170

Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW69  
 Governor no. : 0 420 083 102

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 7.7...7.9

100 s : (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.00...9.40

2nd speed rpm : 1350

travel mm : 8.10...8.30

3rd speed rpm : 650

travel mm : 4.70...5.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.20  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION  
Speed rpm : 330...500

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 700  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1100  
Rack travel in m: 11.20...11.50

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 70.5...73.5  
1000 s: (68.0...76.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 N  
Edition : 13.06.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 189  
Injection pump  
Pump designation : PES6MW100/32ORS1147  
EP type number : 0 413 406 142  
Governor  
Governor design. : RQV275...1250MW80  
Governor no. : 0 420 083 128

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226

1st version kW : 133.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

MD1

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s : (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 7.20...7.30

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s : (0.8...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 9.20...9.60

2nd speed rpm : 1300

travel mm : 7.80...8.00

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h : 750

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees : 45...53

Testing:

1st rack travel in : 9.70

Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1600  
Speed rpm : 0.60...1.60

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.90  
Speed rpm : 275  
Rack travel in mm : 7.20...7.30

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.10...9.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : 220  
Rack travel in m: 9.80...9.90  
2nd pressure hPa : 295  
Rack travel in m: 10.00...10.30  
3rd pressure hPa : 750  
Rack travel in m: 10.70...10.80

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 750  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 92.5...96.5  
1000 s: (90.5...98.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 58.0...60.0  
1000 s: (56.0...62.0)

#### BREAKAWAY

MO2

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1315...1325

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (97.0...123.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.20...7.30  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (8.0...16.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 Q  
Edition : 30.09.88  
Replaces : 16.06.88  
Test oil : ISO-4113

Combination no. : 0 403 446 190

Injection pump  
Pump designation : PES6MW100/32ORS1154  
EP type number : 0 413 406 144  
Governor  
Governor design. : RQV275...1250MW80  
Governor no. : 0 420 083 128

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226

1st version kW : 128.7  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 16.50...19.50

M03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 9.9...10.1

100 s : (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.50...5.70

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 9.20...9.60

2nd speed rpm : 1300

travel mm : 7.80...8.00

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del. quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED